

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



Academic Program and Course Description Guide

Annual

2024–2023

Introduction:

The educational program is considered a coordinating and organizing package of academic courses that encompasses procedures and experiences arranged in the form of an academic syllabuses. The main goal of these syllabuses is to improve and build graduates' skills to make them ready for the job market. The program is annually reviewed and evaluated through internal or external audit procedures and programs like the External Examiner Program.

The academic program description offers a brief summary of the main features of the program and its courses. The program indicates the skills offered to students that are developed based on the goals of the academic program. This description represents a cornerstone of the requirements of program accreditation, so it is written by the teaching staff under the supervision of scientific committees of the scientific departments.

This second version of the guide, includes a description of the academic program after updating the subjects and terminologies of the previous guide to respond to the updates and developments of the educational system in Iraq that includes the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes of that the student is expected to achieve, demonstrating whether he or she has widely benefited from the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be progressive, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the goals and activities necessary to achieve it and determines the program's development paths and directions.

Program Objectives: They are measurable and observable statements that describe what the academic program intends to achieve within a specific period of time.

Curriculum Structure: All courses/ subjects included in the academic program developed according to the approved learning system (quarterly, annual, Bologna Process) whether it is required by (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program, and the learning outcomes of each course must be determined in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies adopted by the faculty members to develop students' teaching and learning. they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: Al-Furat Al-Awsat Technical University

Faculty/Institute: Engineering Technical College/ An najaf

Scientific Department: Building & Construction Technical Engineering
Department

Academic or Professional Program Name: Bachelor of Technical Engineering

Final Certificate Name: Bachelor's degree in building and construction
Technical Engineering

Academic System:

Description Preparation Date: 1/4/2024

File Completion Date: 1/4/2024

Signature:

Head of Department Name:

Dr. Kamal Ali Mohammed

Date:

Signature:

Scientific Associate Name:

Dr. Basil Noori Abed

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 28/4/2024

Signature:

Bassam Abdusahib

Approval of the Dean

1. Program Vision

The vision of the Department of Building and Construction Technical Engineering is to be one of the units concerned with developing technical engineering education in its major in Iraq by providing a distinguished and renewed program that is recognized at the national and international levels. It should provide services and research that enrich the profession and advance the society and a high-quality educational engineering environment in order to provide highly qualified technical engineers for the field of work to build and serve their country.

2. Program Mission

Preparing qualified graduates to work in various technical engineering jobs in the field of building and construction engineering by providing them with a solid foundation in mathematics, basic sciences, and technical engineering sciences in their major. The program mission also aims to provide high-quality programs in education, scientific research, and community service, and helps students to develop their capabilities and hone their scientific and technical skills in order to enable them to successfully compete within the labor market.

3. Program Objectives

The program aims to provide the student with a contemporary practical and academic experience that enriches his or her technical engineering skills in order to distinguish him/ her within the practical life. That general objective should lead to qualify technical engineers, in the major of building and construction technical engineering, who are able, in high efficiency, to do the following:

- 1- Conduct all field, on-site, and laboratory destructive and non-destructive tests, required for all construction materials and soil by reading their results and conforming their compliance with standard specifications. Reading,

preparing and implementing construction and architectural designs, calculating their quantities and costs, and concluding contracts for projects by using the computer with high efficiency.

- 2- Applying methods of design, implementation, management, and organizing workers, materials, and machines to achieve the specific goals of a project.
- 3- Maintaining buildings, roads and other projects and controlling the issue of environmental pollution as it is one of the most significant challenges of the era.
- 4- Using modern surveying equipment extensively to prepare topographic plans and profiles, divide lands, determine road paths, and draw longitudinal and cross-sections.
- 5- Organizing and managing various construction projects using modern methods that based on different computer software, and through adopting professional methods used in construction work, in addition to studying construction machines in terms of their productivity, operation costs, and methods of use.

4. Program Accreditation

Does the program have program accreditation? And from which agency?

No

5. Other external influences

Is there a sponsor for the program?

No

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	5	11	11%	
College Requirements	6	27	13%	
Department Requirements	35	202	76%	
Summer Training				
Other				

* This can include notes whether the course is basic or optional.

7. Program Description						
Year/Level	Course Code	Course Name	Credit Hours			
			theoretical	practical	Lab.	Tutorial
One/1st	ATU16011	Engineering mechanics	4	0		2
	ATU16012	Engineering drawing	2	3		
	ATU16013	Mathematics	4	0		2
	ATU16014	Engineering physics	2	0		2
	ATU16015	Human rights & democracy	2	0		
	ATU16016	English language skills	1	0		
	ATU16017	Arabic Language	1	0		
One/2nd	ATU16021	Construction material	4		3	
	ATU16022	Plane Surveying	4		4	
	ATU16023	Engineering Geology	2		0	
	ATU16024	Descriptive Geometry	2		0	1
	ATU16025	Computer Principles	1		2	
	ATU16026	Workshop	2		0	
Two/3rd	ATU16031	Concrete Technology	3		4	0
	ATU16032	Strength of Materials	4		0	2
	ATU16033	Applied Surveying	2		3	
	ATU16034	Probability & Statistics	2		0	1
	ATU16035	Advanced mathematics	2		0	2
Two/4th	ATU16041	Building Construction	4		0	

	ATU16042	Engineering Surveying	4		3	
	ATU16043	Manufacturing Techniques of Construction	2		1	
	ATU16044	materials	2		3	
	ATU16045	Fluid mechanics	2		2	
	ATU16046	Concrete Technology practices The crimes of the extinct Baath Party	2		0	
Three/5th	ATU16051	Reinforced Concrete	4		0	2
	ATU16052	Structural analysis theory	4		0	2
	ATU16053	Soil mechanics	2		3	
	ATU16054	Construction Management	2		0	1
	ATU16055	Pavement Engineering	3		2	
Three/6th	ATU16061	Advanced Concrete Technology	4		4	
	ATU16062	Masonry building	3		0	
	ATU16063	Construction Equipment	2		0	1
	ATU16064	Engineering & Numerical analysis	3		0	2
	ATU16065	Transportation Engineering	3		3	
Four/7th	ATU16071	Design of Reinforced Concrete buildings	4		0	2
	ATU16072	Foundation Engineering	2		0	2
	ATU16073	Construction drawing	0		3	
	ATU16074	Sustainable Construction materials	2		2	
	ATU16075	Design of steel structures	4		0	2
	ATU16076	Innovative project	1		1	
Four/8th	ATU16081	Materials for heritage buildings	2		2	
	ATU16082	Quantity surveying & Estimation	2		0	2
	ATU16083	Safety in Construction	1		2	
	ATU16084	Computer Aided design of structure	2		3	
	ATU16085	Repairs & Rehabilitation of structures	2		2	
	ATU16086	Environmental Engineering	3		2	

8. Expected learning outcomes of the program

A-Knowledge	Outcomes
A1- Theoretical and practical knowledge in different applications of building and construction engineering. A2- Theoretical and practical knowledge in basics of water	A1- Gaining theoretical knowledge in applications of building and construction engineering. A2- Gaining theoretical and practical knowledge in basics of water resources, environmental, geo-techniques and project management engineering.

<p>resources, environmental, geo-techniques and project management engineering.</p> <p>A3- Reading and understanding maps and design drawings for different applications of building and construction engineering.</p> <p>A4- Performing the theoretical calculations for the different problems in the major.</p>	<p>A3- The ability to read and understand maps and design drawings for different applications of building and construction engineering.</p> <p>A4- The ability to perform the theoretical calculations for the different problems in the major.</p>
B-Skills	Outcomes
<p>B1- Conducting tests for construction materials including soil investigations and gaining the knowledge for their manufacturing techniques.</p> <p>B2- Conducting field surveys for different construction projects.</p> <p>B3- Preparation of structural and topographic drawings using different computer applications.</p> <p>B4- Basics of English and Arabic languages and management-operating of construction equipment.</p>	<p>Gaining the skills for:</p> <p>B1- Tests and manufacturing of construction materials and soil investigations.</p> <p>B2- Field surveys for different construction projects.</p> <p>B3- Using different computer applications for preparation of structural and topographic drawings.</p> <p>B4- Basics of English and Arabic languages as well as management-operating of construction equipment.</p>
C-Ethics	Outcomes
<p>C1- Applying of knowledge and engineering skills for design and construction of safe and sustainable structures.</p> <p>C2- Adherence of professional ethics and social responsibility in practicing of engineering career and</p>	<p>C1- Gaining of knowledge for achieving safety and sustainability in construction project of infrastructure.</p> <p>C2- Characterizing with professional ethics of engineering and dealing with the other according to human rights.</p> <p>C3- Gaining the knowledge of occupational safety in construction projects.</p>

<p>understanding of human rights and democracy in Iraq and the world.</p> <p>C3- Considering all occupational safety requirements and spreading of engineering culture for that.</p> <p>C4- Strengthening of sustainability and environment conservation during the conducting of construction projects.</p>	<p>C4- Gaining the knowledge to achieve sustainability and environment conservation during the conducting of construction projects.</p>
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9. Teaching and Learning Strategies
Lectures, tutorials, reports, homework, laboratory, workshop, summer training, practicing tours.

10. Evaluation methods
Theoretical and practical exams (mid and final) as well as quizzes, seminars and daily assessment.

11. Faculty						
Faculty Members						
Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Civil	Highways				1
Professor	Civil	Building materials				1
Assistant Professor	Civil	Building materials			1	

Lecturer	Civil	Structures			3	
Lecturer	Civil	Building materials			1	
Lecturer	Civil	Water resources			3	
Lecturer	Management	Management				1
Lecturer	Civil	Highways				1
Lecturer	Civil	Environment				1
Lecturer	Civil	Project management				1
Assistant Lecturer	Civil	Construction materials			1	
Assistant Lecturer	Civil	Structures			2	
Assistant Lecturer	Civil	Water resources			1	
Assistant Lecturer	Geography	Geography			1	
Assistant Lecturer	Materials	Materials			1	
Assistant Lecturer	Mathematics	Mathematics			1	1

Professional Development

Mentoring new faculty members

All faculty members; visitors, full-time, and part-time faculty members must pass training course of education methods, Arabic-language integrity course and the test of teaching eligibility. Also, they encourage to work on research and publish research papers.

Professional development of faculty members

All faculty members are encouraged to have professional development by participating in conferences, workshops and seminars in and out of the institute. They are encouraged also, to publish research papers.

12. Acceptance Criterion

Acceptance criterion for the department of construction and building techniques include general regulations of enrollment, development plans, student choice. However, the department accepts only scientific branch students of preparatory studies.

13. The most important sources of information about the program

- Curriculums and syllabuses prepared firstly by department of construction and building techniques in technical engineering college of Mosul.
- The specialized committees in the department, college and the university.
- Suggestions of faculty members within 20% of the syllabus for each subject according to the work market requirements and the development in the world.
- The program of academic accreditation.

14. Program Development Plan

The department of building and construction techniques enhances the skills and talents of his students by encourage them to participate in the different activities and events held in the university.

Program Skills Outline

				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First/1st	ATU16011	Engineering mechanics	Basic	*			*					*			
	ATU16012	Engineering drawing	Basic							*				*	
	ATU16013	Mathematics	Basic			*	*								
	ATU16014	Engineering physics	Basic	*			*					*			
	ATU16015	Human rights & democracy	Basic										*		
	ATU16016	English language skills	Basic									*			
	ATU16017	Arabic Language	Basic									*			
First/2nd	ATU16021	Construction materials	Basic	*				*							
	ATU16022	Plane Surveying	Basic			*				*	*				
	ATU16023	Engineering Geology	Basic	*	*										

	ATU16024	Descriptive Geometry	Basic		*					*					
	ATU16025	Computer Principles	Basic						*						
	ATU16026	Workshops	Basic	*				*							
Second/3rd	ATU16031	Concrete Technology	Basic	*				*				*		*	*
	ATU16032	Strength of Materials	Basic	*	*		*								
	ATU16033	Applied Surveying	Basic			*			*	*					
	ATU16034	Engineering Statistics	Basic	*			*								
	ATU16035	Advanced mathematics	Basic	*			*								
Second/4th	ATU16041	Building construction	Basic	*								*			
	ATU16042	Engineering Surveying	Basic			*			*	*					
	ATU16043	Manufacturing Techniques of Construction materials	Basic	*				*							
	ATU16044	Fluid mechanics	Basic		*										
	ATU16045	Concrete Technology practices	Basic	*				*				*		*	*

	ATU16073	Construction drawing	Basic			*				*				
	ATU16074	Sustainable Construction materials	Basic	*							*			
	ATU16075	Design of steel structures	Basic	*	*		*							
	ATU16076	Innovative engineering project	Basic	*				*						
Four/8th	ATU16081	Materials for heritage buildings	Basic	*							*			
	ATU16082	Quantity surveying & Estimation	Basic	*			*							
	ATU16083	Safety in Construction	Basic								*	*		*
	ATU16084	Computer Aided design of structure	Basic	*			*		*					
	ATU16085	Repairs & Rehabilitation of structures	Basic	*				*				*		
	ATU16086	Environmental Engineering	Basic								*			*

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.



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University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: Adnan kadhum
Scientific title: Assistant Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

1- Course Name	Building Construction
2- Course Code	
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/6/1
5- Available Attendance Forms:	Lectures in the presence of students and online if necessary
6- Number of study hours (total)/number of units (total)	6 units/30 week
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Adnan kadhum adnan.kadem @atu.edu.iq

8. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

9. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Building Construction , the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Building Construction and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field	B1	Students use the latest modern laboratory and programming technologies	√

of specialization and managing them with skilled technicians.			
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1	4	Knowledge and understanding	Site investigation , phases of site and soil investigation .	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
2	4	Knowledge and understanding	Methods of soil investigation , open-pit , boring and auger , standard and cone test methods .	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters

3	4	Knowledge and understanding	√	Bearing capacity , calculation and determination in filed and laboratory , increasing of bearing capacity and its relation with foundation design .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	4	Knowledge and understanding	√	Excavation and filling work , cut and fill , shoring system , angle of repose ,failure of embankment , layers of filling .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

5-6	8	Knowledge and understanding	√	Types of foundations , excavation , shoring system , reinforcing and concrete casting , drying of site work .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
7	4	Knowledge and understanding	√	Pile foundations ,bored and driven piles , sheet piles , capping of piles.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
8	4	Knowledge and understanding	√	Masonry stone work , stone building types and specifications , building under ground level , above ground level , preparation of stone building .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
9	4	Knowledge and understanding	√	Brick and block works ,British and Flemish	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	arrangements , procedure to construct walls, connections between old and new walls .	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

10	4	Knowledge and understanding	√	Hollow cavity walls , their specifications and components , reinforced walls.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
11	4	Knowledge and understanding	√	Thermal insulation materials , specification and types ,thermal transmittance factor , resistance concept .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
12	4	Knowledge and understanding	√	Acoustical insulation and fire resistance for building	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
13	4	Knowledge and understanding	√	Concrete Forms, timber forms(specification and	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	components), bracing for roofs and columns .	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

14	4	Knowledge and understanding	√	Slip and travel forms , components and operation .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
15	4	Knowledge and understanding	√	Scaffolding ,types ,components ,uses .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
16	4	Knowledge and understanding	√	Columns classification , reinforcement , shape of their failures ,spiral reinforcement .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
17&18	8	Knowledge and understanding	√	Beams ,types ,timber ,steel , and concert	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	beams pre-cast pre- stress beams.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

19	4	Knowledge and understanding	√	Floors and roofs , timber , jack arching	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
20	4	Knowledge and understanding	√	Concrete floors and roofs , one way , two way ,and ribbed slabs , composite , cellular , arch and shell roofs.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
21	4	Knowledge and understanding	√	Lift slab system and space frame roofing .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
22	4	Knowledge and understanding	√	Damp proofing materials , application and	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	treatment of roofs , basement and walls .	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

23	4	Knowledge and understanding	√	Floor finishing , tiles and ceramics	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
24	4	Knowledge and understanding	√	Inner wall finishing by Gypsum , paints ,and Gypsum board .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
25	4	Knowledge and understanding	√	External wall finishing by cement mortars , stone tiles and painting .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
26	4	Knowledge and understanding	√	Modern finishing materials , specification ,	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	benefits and application system .	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

27	4	Knowledge and understanding	√	Doors and windows and upstairs rails .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
28	4	Knowledge and understanding	√	Type of maintenances , preservation and periodical maintenances .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
29	4	Knowledge and understanding	√	Type of failure in building , causes and measures.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
30	4	Knowledge and understanding	√	Treatment of building failures , special materials	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	uses for treatment.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

11. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

n 2006
n handbook 2001

Required textbooks

Main references (sources)

Recommended supporting books and references
(scientific journals, reports....)

Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Technology
Engineering
Scientific title: Lecturer
Academic qualification: Master
Work location: Building & Construction Technologies
engineering

Course Description Form 2023/2024

8- Course Name	Computer Applications (1)
9- Course Code	
10- Semester / Year	2023-2024
11- Description Preparation Date:	29/6/2024
12- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
13- Number of study hours (total)/number of units (total)	4 unit/30 week
14- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Mohammed qasim mohammed.shaaban@atu.edu.iq

10. Expected learning outcomes of the program

Knowledge and understanding

A1	The student must learn the structural analysis & design for all structures types using the most recent methods including programs such as (STAAD. pro, CONCAD, SAFE, CSI Bridge, Prokon, Epanet and AutoCAD land development desktop).	√
Subject-specific skills		
B1	Able to find out internal forces in structural members.	√
B2	can make the shear force ,axial force and bending moments diagrams for beams, frames.	√
B3	make the analysis for trusses and frames.	√
B5	Ready to design concrete and steel members .	
B6	Has the ability to recognize the correct execution of structural members during construction	
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Teaching students the analysis and design of structural elements, trusses, and frames using several computer programs	√

11. Teaching and Learning Strategies

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments that are interesting to the students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
1-	The student will be able to use the various commands of the (STAAD pro) and deal with the graphical interfaces of it	√
2-	The student will be able to enter various data for any structure and extract results using staad pro	√
3-	The student will be able to analyze and design different structures using STAAD Pro	

4- The student will be able to use the (SAFE) to analyze and design slabs	
5- The student will be able to use (CSI bridge)	√
6- The student will be able to use (EPANT)	√

13. Objectives of the educational program: Given the rapid scientific and technological progress in the field of Computer Applications (1), the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Computer Applications (1) and keeping pace with rapid scientific development through direct contact with decision-makers for civil engineering in all parts of the world and direct contact with specialized colleges and institutes..	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to local project implementation sites, seminars, and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings	√
	D2	Continuous review and evaluation of the activities of students and faculty members	√
	D3	Encouraging student initiatives and achievements in various academic, artistic and religious fields with faculty members	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method
1	3	Knowledge and understanding	√	Introduction to Surfer v.10.	The direct method is through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
2&3	6	Knowledge and understanding	√	Review theories and formulas using in surveying.	The direct method is through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
4&5 &6	9	Knowledge and understanding	√	Explain of Surfer program interface and use the program to draw the contour lines in limited area.	The direct method is through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

7&8 &9	9	Knowledge and understanding	√	Explain of icons and description of input data.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
10	3	Knowledge and understanding	√	Discussion of the program results based on input data.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
11& 12	6	Knowledge and understanding	√	Examples and assignments with discuss the procedure of input and output data.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
	9	Knowledge and understanding	√		The direct method is .through lectures	√	Written tests

13& 14& 15		Subject-specific skills	√	Using the program to find the amount volumes of cut and fill for any construction based on the design level proposed earlier, theories, procedure and examples.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
16& 17	6	Knowledge and understanding	√	Introduction to Prokon v.2.4.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
18& 19	6	Knowledge and understanding	√	Review theories and formulas using in drawing of shear and moment diagrams.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
20& 21& 22	9	Knowledge and understanding	√	Explain of Prokon program interface and use	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	the program to draw the diagrams of shear and moments and analysis of beam.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
23& 24& 25	9	Knowledge and understanding	√	Explain of icons and description of input data.	The direct method is .through lectures	√	Written te
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exam
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion fi and performan assista
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects a observati
26	3	Knowledge and understanding	√	Discussion of the program results based on input data	The direct method is .through lectures	√	Written te
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exam
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion fi and performan assista
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects a observati
	6	Knowledge and understanding	√		The direct method is .through lectures	√	Written te

27& 28		Subject-specific skills	√	. Examples and assignments with discuss the procedure of input and output data.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exam
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion fi and performan assista
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects a observati
29& 30	6			Using the program to find the results of many problems in behavior of beams and columns and problems of strength of materials, theories, procedure and examples.			

11. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
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uch to Image Processing: Classical and Modern Techniques in C, Prentice Hall PTR, ISBN: 0-13-226416-1.
ing Algorithms and Applications, John Wiley and Sons, New York, 419 pp. ISBN: 0-

Required Texts

l to software CD).

CO 80401-1866, USA.	
	Websites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: narjes jasim
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

15-	Course Name	
		: Advanced Mathematics
16-	Course Code	
17-	Semester / Year	2024/2023
18-	Description Preparation Date:	2024/6/1
19-	Available Attendance Forms:	Lectures in the presence of students (Online if necessary) and Lab.
20-	Number of study hours (total)/number of units (total)	unit6/30week
21-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	narjes jasim

12. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

13. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

14. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Advanced Mathematics, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Advanced Mathematics and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in concrete technology.	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√

	A4	Expanding students' concepts with field visits to domestic airports, seminars and training in sector projects and companies in the building and construction materials sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

15. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1&2	8	Knowledge and understanding	Multiple integrals ,double integrals , area by double integration , triple integrals , volume by double and triple integrations.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
3&4	8	Knowledge and understanding	Polar coordinates , curves by polar coordinates ,area by polar double integrations , cylindrical and spherical coordinates, equations of solids	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters

5&6 &7	12	Knowledge and understanding	√	Ordinary differential equations of first order ,separable , homogeneous , exact and not exact , linear and Bernoulli first order equations , general and condition solutions , applications	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8&9	8	Knowledge and understanding	√	Linear differential equations with constant coefficients, homogeneous and non-homogeneous equations , equation of higher order , general and condition solutions , applications.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

10&1 1	8	Knowledge and understanding	√	Partial derivatives with two and more two variables , higher- order partial derivatives , chain rule for partial derivatives , maxima & minima of function of two variables , saddle point and relative extrema.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
12&1 3	8	Knowledge and understanding	√	Vector analysis , dot and cross product of vector functions , velocity and acceleration ,gradient of vector fields,divergance and curl of vector fields .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
14&1 5	8	Knowledge and understanding	√	Equations of the lines and surfaces in space , intersection of lines and surfaces using vectors , lagrange multipliers with two and more constraints.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
	8	Knowledge and understanding	√		The direct method is .through lectures	√	Written tests

16&1 7		Subject-specific skills	√	Complex numbers and functions , demoi- res theorem, roots ,argand diagram, cauchy – rehmann equations.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan- assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
18&1 9	8	Knowledge and understanding	√	Limits , Infinite sequences , convergence and divergence , infinite series , geometric and ordinary series , positive and alternative series , test of convergences	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan- assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
20&2 1	8	Knowledge and understanding	√	Power series , maclaurin series taylor and trigonometric series .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan- assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
22&2 3	8	Knowledge and understanding	√	Fourier series for periodic function , euler	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	coefficients , applications	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
24&25	8	Knowledge and understanding	√	Green's theorem for enclosed curves , line integral	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
26&27&28	16	Knowledge and understanding	√	Matrices , Adjoins & inverses , solving linear equations using the inverse of matrix , determinants and cramer method to solve linear equations , Gaussian elimination and gauss-seidel elimination.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
29&30	8	Knowledge and understanding	√	Improper integration and Laplace transform of	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing	√	Oral exams

			some common functions , properties of Laplace transform.	research papers and discussing them collectively		
	thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
	Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

16. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Daily preparation	Report-practical	class activities	Lab.	mid-exam	Final/practical exam	Final/theoretical exam
10%	10%	10%	10%	10%	20%	30%

ics /C. Ray Wylie	Required textbooks (methodology, if any)
Sharma & I . J. S . Sarna	
icists / Pipes & Harvill	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: Adnan kadhum
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

22-	Course Name	Surveying (2)
23-	Course Code	
24-	Semester / Year	2024/2023
25-	Description Preparation Date:	2024/6/1
26-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
27-	Number of study hours (total)/number of units (total)	7 units/30 week
28-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Adnan kadhum adnan.kadem @atu.edu.iq

14. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

15. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√

g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

18. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of **Applied Surveying**, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Applied Surveying and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√

F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

19. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1	2	Knowledge and understanding	Theodolites , Principle of construction	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
2	2	Knowledge and understanding	Measuring Horizontal angles	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters

3	2	Knowledge and understanding	√	Measuring angles in vertical plane	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4&5	4	Knowledge and understanding	√	Directions , Whole circle bearing , Reduce Bearing	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

6	2	Knowledge and understanding	√	Traverse Surveys , Bearings , forward & Back bearing	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
7	2	Knowledge and understanding	√	Close circle traverse, coordinates calculations	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
8	2	Knowledge and understanding	√	Close connected traverse , coordinates calculations	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
9	2	Knowledge and understanding	√	Tacheometry , stadia	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	tacheometry , Inclined sights	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
10	2	Knowledge and understanding	√	Electromagnetic distance measurement(EDM), basic concept, systems	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
11	2	Knowledge and understanding	√	Total station, line measurement, Field Techniques, point location, missing ts	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
12	2	Knowledge and understanding	√	Resection , Azimuth, elevation , Layout Positions	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams

				and area computation	discussing them collectively		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
13	2	Knowledge and understanding	√	Motorized Total stations, Automatic ,remote control, computerized	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

11. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment methods
14&15	4	Knowledge and understanding	√	Horizontal Curves , Kinds , computations	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
16&17	4	Knowledge and understanding	√	Vertical Curves , Kinds , Computations	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing	√	Oral exams

					research papers and discussing them collectively		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
18	2	Knowledge and understanding	√	Setting out construction , small & large building	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
19	2	Knowledge and understanding	√	Balancing thermal furnaces	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
20	2	Knowledge and understanding	√	Tunnel surveying	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
21	2	Knowledge and understanding	√	Arial photogrammetric surveying	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
22	2	Knowledge and understanding	√	Photogrammetric traditional surveying	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
23	2	Knowledge and understanding	√	Photogrammetric Instruments & Flight design	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research	√	Completion file and performan assistant

					carried out in the field of .specialization		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
24	2	Knowledge and understanding	√	Computer Programs	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
25&26	4	Knowledge and understanding	√	Global Positioning System (GPS)	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
27	2	Knowledge and understanding	√	Geographic Information system (GIS)	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
28&2 9&30	8	Knowledge and understanding	√	Field measurements by using total station and calculations, for for certain projects	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

, FRICS. Naga. Raj. R.	Required textbooks
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: Mahdi J.Hussein
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

29-	Course Name
	Concrete Technology
30-	Course Code
31-	Semester / Year
	2024/2023
32-	Description Preparation Date:
	2024/6/1
33-	Available Attendance Forms:
	Lectures in the presence of students (Online if necessary) and Lab.
34-	Number of study hours (total)/number of units (total)
	6unit/30 week
35-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)
	Name: Dr. Mahdi Jasim Hussein Email: mahdi.jasim.cnj@atu.edu.iq

16. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

17. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).

a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

20. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of concrete technology, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of concrete technology and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in concrete technology.	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits to domestic airports, seminars and training in sector projects and companies in the building and construction materials sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√

	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct as
1	2	Knowledge and understanding	√	Composition of concrete; Functions of the paste and aggregate ; General properties of ordinary concretes .	The direct method is .through lectures	√	Written
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral ex
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion and perform assis
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects observa
2	2	Knowledge and understanding	√	Concrete – making materials – Portland Cement ; basic constitutes of cement ; Chemical formulas and processes .	The direct method is .through lectures	√	Written
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral ex
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion and perform assis
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects observa
3&4	4	Knowledge and understanding	√	Manufacture of Portland cement ; Chemical analysis of Portland cement ; major compounds in Portland Cement; Influence of	The direct method is .through lectures	√	Written
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral ex
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion and perform assis

		Generic and transferable skills (other skills related to employability and personal development)	√	composition upon characteristics of Portland cement .	An interactive method by dividing students into small groups	√	Projects observ
5&6 &7	6	Knowledge and understanding	√	Properties of Portland cement : Fineness of cement ; Consistency of cement paste ; Hydration reactions in cement paste ; Hydration of cement ; heat of Hydration ; setting and hardening of cement : time of setting , soundness of cement paste , strength of cement paste , loss of ignition .	The direct method is .through lectures	√	Written
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral ex
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion and perform assi
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects observ

8&9 & 10&1 1	8	Knowledge and understanding	√	Types of Portland cement : Ordinary ; Modified ; Rapid hardening ; low heat ; Sulphate resisting . Other types : High–early strength ;Pozzolana–cement and pozzolanas;Slag cement ; Blast – Furnas - slag ; Masonry cement ; Expansive cement ; Aluminous cement ; White Portland ; Fly – ash ; Anti – bacterial ; Hydrophobic cement ; Waterproof cement ; Natural cement .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
12&1 3&14 & 15&1 6&17 & 18&1 9	16	Knowledge and understanding	√	CONCRETE AGGREGATES : Preliminary remarks ; general characteristics ; data needed for proportioning mixtures ; sampling aggregate; particle shape and texture ; bond of aggregates ; specific gravity ;unit weight and voids ; porosity and absorption, moisture content ; Gradation ; sieve analysis ; maximum size of aggregates ; fineness modulus , practical	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams

		thinking skills	√	grading ; gap – graded aggregates; oversize and undersize ; all – in aggregates ; bulking of sand ; soundness of aggregates ; handling and storing aggregates ; Deleterious substances : organic impurities ; alkali – aggregates reaction ; alkali – carbonate reaction ; thermal properties of aggregates .	Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
20	2	Knowledge and understanding	√	WATER : Mixing water ; Curing water .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
	8	Knowledge and understanding	√	ADMIXTURES :	The direct method is .through lectures	√	Written tests

21&2 2& 23&2 4		Subject-specific skills	√	Accelerators : Retarders ; Water – Reducing Admixture; super plasticizers ;Workability admixtures ; Air –entraining Admixtures ; Expansion – producing Admixtures; Pozzolanic materials ;Bonding admixtures; Curing aids ; Water Proofers ; Colouring agents ; Surface hardeners .	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
25&2 6& 27&2 8& 29&3 0	12	Knowledge and understanding	√	FRESH CONCRETE : Introduction ; Properties of fresh concrete :(Workability; Consistency ; Segregation ; Bleeding ; Unit weight) . Measurement of workability and Consistency . Factors affecting workability . Air – Entrainment ; Measurement of Entrained – Air : (Volumetric ; Gravimetric and	The direct method is .through lectures	√	Written
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral ex
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion and performan assis
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects observ

				Pressure methods) Unit weight ; yield ; Cement factor . Manufacture of concrete: Batching; Mixing ; Conveying ; Placing ; Compacting ; and Curing of concrete .		
--	--	--	--	---	--	--

Grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written

	class activities	Lab.	mid-exam	Final/practical exam	Final/theoretical exam
	10%	10%	10%	20%	30%

NEVILLE, 3 rd. Ed. , A pitman International Text. (1981) . f Concrete " , TROXELL , AVIS , and KELLY , Mc Graw - Hill nology", Vol. 1,2&3, (1978) . ecifications for concrete works . حمد علي العريان و د. عبد الكريم محمد عطا " تكنولوجيا الخرسانة : مواد الخر ، الطبعة الثانية ، عالم الكتب ، د.كنانة محمد ثابت و د.رياض حامد الدباغ ويوسف عمرو	Required textbooks (methodology, if any)
	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng. Technologies
Name lecturer: Alaa Mohsin Dawood
Scientific title: Lecturer
Academic qualification: master
Work location: Building & Construction Eng. Technologies

Course Description Form 2023/2024

36-	Course Name	Fluid Mechanic
37-	Course Code	
38-	Semester / Year	2024/2023
39-	Description Preparation Date:	2024/6/1
40-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
41-	Number of study hours (total)/number of units (total)	4 units/30 week
42-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Name: Lect. Alaa Mohsin Dawood Email: alaa.dawood @atu.edu.iq

18. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

19. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√

g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

21. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Fluid Mechanics, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Fluid Mechanics and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√

F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

22. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct asses metho
1	3	Knowledge and understanding	√	SI Units, dimensions , symbols , abbreviations	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
2-3	6	Knowledge and understanding	√	Development of fluid mechanics, properties of fluids; density, specific weight, viscosity, compressibility, surface tension, capillarity etc. Characteristics of flow; discharge, velocity, pressure, shear etc.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
4-5	6	Knowledge and understanding	√	Fluid static's; absolute and gauge pressure, pressure measurement; Bourdon gauge, piezometer column, simple manometer, differential manometers. Hydrostatic forces on plane and curved	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

				surfaces, center of pressure.			
6-7	Knowledge and understanding	√	Kinematics of fluid flow; classification of types of flow; streamlines, stream tube, path lines, flow net; continuity equation.	The direct method is .through lectures	√	Written tests	√
	Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√
	thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√
	Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation	

8-10	6	Knowledge and understanding	√	Energy equation for steady flow; potential, kinetic and flow energy; hydraulic grade line and energy line; cavitations; power; solution of flow problems; jet trajectory.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
11-13	6	Knowledge and understanding	√	Momentum in fluid flow; impulse momentum principle; momentum correction factor ; forces on pressure conduits ; forces on stationary blades ; forces on moving blades ;jet reaction ; application of momentum equation to fluid flow problems .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
14-16	6	Knowledge and understanding	√	Steady flow in pressure conduits ; laminar and turbulent flow; critical flow ; general equation for conduit friction ;friction for laminar flow ; friction for turbulent flow ; pipe roughness ;	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation

		to employability and personal development)		friction factor charts ; empirical equations for pipe flow; economical diameter of pipes.			
17-18	6	Knowledge and understanding	√	Minor head losses; loss at entrance, losses due to contraction; losses due to expansion ; loss in pipe fittings ; loss in bend and elbows, etc .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

19-20	6	Knowledge and understanding	√	Solution of practical pipeline problems; pipeline with pumps.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
21-22	6	Knowledge and understanding	√	Equivalent pipes; branching pipes; pipes in series; pipes in parallel. Hazen-Williams's formula.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

23-24	6	Knowledge and understanding	√	Pipe networks; Hardy cross method; computer aided pipe - network analysis.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
						√	Oral exams
						√	Completion file and performan assistant
						√	Projects and observation
25-26	6	Knowledge and understanding	√	Fluid measurements ; measurement of fluid properties ; measurement of static pressure ; velocity measurement by different methods ; measurements of discharge ; nozzles ; coefficients of contraction ; coefficients of velocity; coefficients of discharge;	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

27-28	6	Knowledge and understanding	√	Hydraulic similitude; geometric similarity; kinematics similarity; dynamic similarity; Reynolds number , Froude number , Mach number , Weber number, Euler number; scale ratios ; models ; dimensional analysis .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
29-30	6	Knowledge and understanding	√	Unsteady flow problems; discharge with varying head. Unsteady flow in pipes. Water hammer. .Surge tanks	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

11. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

entice Hall. d Machinery). New Age international publishers McGraw-Hill, New York.	Required textbooks
anics and Hydraulic Machines). S. Chand and Co. Ltd.	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
 Scientific Supervision and Scientific Evaluation Apparatus
 Directorate of Quality Assurance and Academic
 Accreditation
 Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: noor hashim
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

43-	Course Name
	Technology of Construction Materials Industry
44-	Course Code
	Year
	2024/2023
45-	Description Preparation Date:
	2024/6/1
46-	Available Attendance Forms:
	Lectures in the presence of students and online if necessary
47-	Number of study hours (total)/number of units (total)
	4units/30 week
48-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)
	Noor hashim

20. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

21. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√

g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

23. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Technology of Construction Materials Industry , the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Technology of Construction Materials Industry and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√

F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

24. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1	2	Knowledge and understanding	Factory , Factors affecting choose site , Planning device & equipment.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
2&3	4	Knowledge and understanding	Production & industry operations for several types of clay bricks.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters

4	2	Knowledge and understanding	√	Production of sand-lime brick.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	2	Knowledge and understanding	√	Concrete brick & block.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

6	2	Knowledge and understanding	√	Production of cellular concrete block.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
7&8	4	Knowledge and understanding	√	Manufacturing of gypsum (Ordinary gypsum , Plaster of Paris , Keen's cement).	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
9	2	Knowledge and understanding	√	Lime production.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
10&11	4	Knowledge and understanding	√	Manufacturing of ordinary &	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√	Terrazzo tiles , Concrete tiles.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

12	2	Knowledge and understanding	√	Ceramic tile & veneer.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
13&14	4	Knowledge and understanding	√	Production of floor structural clay tile , Backed brick.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
15&16	4	Knowledge and understanding	√	Production of bituminous materials.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
17	2	Knowledge and understanding	√	Manufacturing of epoxy.	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

18&1 9	4	Knowledge and understanding	√	Production of ferrous metals (steel).	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
20&2 1	4	Knowledge and understanding	√	Production of non-ferrous metals (aluminum , copper , etc.,.....).	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
22&2 3	4	Knowledge and understanding	√	Production of pipes with several materials.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
24&2 5	4	Knowledge and understanding	√	Industrialized wood , Production.	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

26&27	8	Knowledge and understanding	√	Manufacturing of paints.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
28	4	Knowledge and understanding	√	Production of glass.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
29	4	Knowledge and understanding	√	Manufacturing of plastics.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
30	4	Knowledge and understanding	√	Building papers production.	The direct method is .through lectures	√	Written tests

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

Mckay . eve . A. Wacton .	Required textbooks
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng. Technologies
Name lecturer: Kamal Ali Mohamad
Scientific title: lecture
Academic qualification: Doctorate
Work location: Building & Construction Eng. Technologies

Course Description Form 2023/2024

49-	Course Name	Strength Of Materials
50-	Course Code	
51-	Semester / Year	2024/2023
52-	Description Preparation Date:	2024/6/1
53-	Available Attendance Forms:	Lectures in the presence of students (Online if necessary) and Lab.
54-	Number of study hours (total)/number of units (total)	6 uni0week
55-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Name: Dr. Kamal Ali Mohamad Email: kamal.alfadly@atu.edu.iq

22. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√

A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D2	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

23. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	

e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

25. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Strength Of Materials, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Strength Of Materials and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in concrete technology.	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits to domestic airports, seminars and training in sector projects and companies in the building and construction materials sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√

	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

26. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method				
1-2-3	12	Knowledge and understanding	√	Simple stress: Analysis of internal forces , Simple stress , Shearing stress , .Bearing stress	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions				
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√					Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√					Completion files and performance assistant		Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√					Projects and observation		external assessmeters
6-5-4	12	Knowledge and understanding	√	Riveted & Welded Connections: Types of riveted joints , Strength of a simple lap joint , Structural riveted joints , Welded constructions.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions				
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√					Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√					Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√					Projects and observation		external assessmeters

7-8-9-10-	12	Knowledge and understanding	√	Simple Strain: Stress-strain diagram , Hooke's law , Axial deformation , Poisson's ratio , Biaxial & Tri-axial deformations , Statically indeterminate members , Thermal .stresses	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11-12	8	Knowledge and understanding	√	Torsion: Derivation of torsion formulas , Longitudinal shearing .stress , Shear flow	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

-14-13 15	12	Knowledge and understanding	√	Shear and Moment in Beams: Shear & moment , Shear & moment diagrams , Relations between load ; shear .& moment	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-17-16 19-18	16	Knowledge and understanding	√	Stresses in Beams: Derivation of flexure formulas , Economic sections , Unsymmetrical beams , Analysis of flexure action , Formula for horizontal shear stress.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-21-20 23-22	16	Knowledge and understanding	√	Beams Deflections: Theorem of area-moment method ,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	Double integration .method	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24-25-26-27	16	Knowledge and understanding	√	Combined Stresses: Combined axial & flexural loads , Kern of a section , Loads applied off axes of symmetry , Stress at a point , Mohr's circle , Transformation of .strain components	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

-29-28 30	12	Knowledge and understanding	√	Columns: Critical loads , Long columns by Euler's formula , Intermediate columns , Empirical .formulas	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

11. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Daily preparation	Report-practical	class activities	Lab.	mid-exam	Final/practical exam	Final/theoretical exam
10%	10%	10%	10%	10%	20%	30%

12. Learning and teaching resources

1. Strength of Materials / Ferdinand L. Singer & Andrew Pytel. 2. Strength of Materials / R. S. Khurmi.	Required textbooks (methodology, if any)
Solution of Problems in Strength of Materials and Mechanics of Solids / S. A. Urry & P.J. Turner.	Main references (sources)
Academia, Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologi
Name lecturer: mohammed ali
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & ConstructionEng.Technologie

Course Description Form 2023/2024

1- Course Name	Engineering Management & Construction Equipments
2- Course Code	
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/6/1
5- Available Attendance Forms:	Lectures in the presence of students and online if necessary
6- Number of study hours (total)/number of units (total)	30 week/ 6 units
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. mohammed ali ahmed

8. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√

f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Engineering Management & Construction Equipments Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Engineering Management & Construction Equipments and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√

	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1	4	Knowledge and understanding	Introduction and historical review of project management.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
2-3	8	Knowledge and understanding	Work breakdown structure and management triangle theory	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters

4-5	8	Knowledge and understanding	√	Critical path method (CPM): Calculation of activity durations, float time, calculation of critical path, advantages and disadvantages and examples.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6-7-8	12	Knowledge and understanding	√	Program (Project) evaluation and review technique (PERT): Calculation of activity most likely durations, float time, calculation of critical path, advantages and disadvantages and examples.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

9-10	8	Knowledge and understanding	√	Description of activity durations, crantt chart as outline of critical path description, advantages and disadvantages and examples.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11-12-13	12	Knowledge and understanding	√	Crashing time method, description, advantages and disadvantages and examples	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14-15	8	Knowledge and understanding	√	Economical study on time value of money, advantages and and examples.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16	4	Knowledge and understanding	√	Introduction ,the role of equipments in various projects and its important in economic constructions , the controlling of material and equipments during construction stages .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

17-18	8	Knowledge and understanding	√	Arrangement of machines records , regular and annual maintenance ,the factors affecting the efficiency during work ,the factors affecting the selection and owning of machines and calculating the working cost, the standard and special equipments	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19-20	8	Knowledge and understanding	√	Excavation equipments, hoes, dragline , trench , and tunnel excavators , types and work efficiency, application and examples .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21-22-23-24-25-	20	Knowledge and understanding	√	Road excavator equipments , shovel, grader , bulldozer ,and scraper , types ,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	work efficiency , productivity , benefit and cost , application and examples.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-27-	8	Knowledge and understanding	√	Trucks , rear dump truck , bottom dump truck , their capacities and numbers ,the factors affecting their efficiency ,application and examples .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

28	4	Knowledge and understanding	√	Compactors, compactors with vibrators , for clay soils , granular soils , asphalt layers , steel, sheep foot, and pneumatic rollers ,manual vibrating compactors ,action of compacting , methods of compacting different types of soils and asphalt , site laboratory tests.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
29	4	Knowledge and understanding	√	Concrete mix plants , components and specifications , truck mixer and their specifications ,specification of aggregates and cement and their test , concrete spreader at the site	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
30	4	Knowledge and understanding	√	Cranes ,winch ,lifting apparatus, fork cranes , jacks, multistory building cranes	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written

	class activities	mid-exam	Final/theoretical exam
	10%	10%	50%

<p>/ G. Barder.</p> <p>ment & Methods / R. L. Peurifoy & W. B. Ledbetter .</p>	Required textbooks (methodology, if any)
<p>agement / S.W. Nunnally</p> <p>agement / S.W. Nunnally</p>	Main references (sources)
<p>with PERT & CPM / B.C. Punmia & K.K. Khandelnal .</p>	Recommended supporting books and references (scientific journals, reports....)
<p>ment & Methods / Peurifoy .</p>	Electronic references, Internet sites



University: Al-Furat Al-Awsat Technical University
 College: Engineering Technical College/ NAJAF
 Department: Building & Construction Eng. Technologies
 Name lecturer: rusul abd alhadi
 Scientific title: Assistant Lecturer
 Academic qualification: Master
 Work location: Building & Construction Eng. Technologies

Course Description Form 2023/2024

8- Course Name	Computer Applications (2)
9- Course Code	
10- Semester / Year	2024/2023
11- Description Preparation Date:	2024/6/1
12- Available Attendance Forms:	Lectures in the presence of students and online if necessary
13- Number of study hours (total)/number of units (total)	4 units/30 week
14- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Rusul abd alhadi

10. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

11. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√

g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

15. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Computer Applications (2), the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of and k Computer Applications (2) keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√

	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

16. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1	3	Knowledge and understanding	Introduction to: PROJECT MANAGEMENT WORKSHOP, Project Definition, project Management, Project stages, planning, activity list, Dependency list, logic network analysis, scheduling and critical path calculation.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
2-3	6	Knowledge and understanding	Instilling Primavera Software, open a previous project, adding a new project, Describing the program screen, Adding activities to a project, Logic relationship, activity codes, Creation and Deleting Codes dictionaries, Creating and Deleting Activity	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research	Completion files and performance assistant	Interviews or questionnaires to

				and Default Activity code	carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	3	Knowledge and understanding	√	DEFINING CALENDARS: Daily Calendar, Daily Base Calendar, adding colander to activities	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	3	Knowledge and understanding	√	Activity Types	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

6	3	Knowledge and understanding	√	Adding the Logic: Adding Relationship to the activities, Auto Link, Deleting Relationship, PERT View, Formatting your PERT View	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	3	Knowledge and understanding	√	Constraints: Date Constraints, Float Constraints	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)								
8	3	Knowledge and understanding	√	Scheduling the Project	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9-10	6	Knowledge and understanding	√	Formatting The Display : Toolbars, Columns, Formatting the Bars in the Bar Chart, Format Individual Bars, Format Sight Lines, Format Row Height, Format Fonts, Format Dates, Changing Language for Column Description And Timescale, Screen	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√	separator , Thousand Separator	An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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11	3	Knowledge and understanding	√	Filters & Layouts: understanding filters, Creating & Editing Filters , Understanding All & Any, Understanding Rolling Dates, Filter Levels, Modifying Filters, Replaying Filters	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	3	Knowledge and understanding	√	Layouts	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)								
13-14	6	Knowledge and understanding	√	Work breakdown Structure WBS:	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	3	Knowledge and understanding	√	Creating & Using Resources : Resources definition, Creating Resource, Assigning Resources to Activities, Resources dialog block, Costs dialog block, Assign Resources Against Multiple Activities, Summary Percent Calculation, Editing Resources Calendar,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√	Editing a Resource Calendar, Resource Histogram, Resources Table, Printing tables and Layouts	An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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16	3	Knowledge and understanding	√	Introduction to ConcAD v.1.52.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
17	3	Knowledge and understanding	√	Review theories and formulas using in analysis and design of beams and columns.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)								
18	3	Knowledge and understanding	√	Explain of the program interface and use the program to analysis and design of beams, columns and footings.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19	3	Knowledge and understanding	√	Explain of icons and description of input data.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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20	3	Knowledge and understanding	√	Discussion of the program results based on input data	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21-22	6	Knowledge and understanding	√	Examples and assignments with discuss the procedure of analysis and design different types of beams.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)								
23-24	6	Knowledge and understanding	√	Examples and assignments with discuss the procedure of analysis and design of columns	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
25-26	6	Knowledge and understanding	√	Examples and assignments with discuss the procedure of analysis and design of various types of footings	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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27-28	6	Knowledge and understanding	√	Examples and assignments with discuss the procedure of analysis and design of torsion and shear reinforcements, development length of bars of a beam.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
29-30	6	Knowledge and understanding	√	Examples and assignments with discuss the procedure of analysis and design of one way slabs.	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

17. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	0%	20%	50%

<p>1- تخطيط المشاريع باستخدام البرنامج بريمافيرا ، ترجمة الدكتور المهندس ابراهيم الحكيم ، شعاع للنشر والعلوم ، سورية – حل 2002</p> <p>Project Planning & Scheduling Using Primavera® P6, By Paul Eastwood Harris, http://www.damagate.com/vb/t144508/</p>	Required textbooks (methodology, if any)
<p>Primavera Enterprise إدارة المشروعات باستخدام برنامج (بريمافيرا انتربرايز</p>	Main references (sources)
<p>You tube - http://www.damagate.com/vb/t144508/</p> <p>- James, K. Nelson, JR. 1998. User* Manual, Version 1.52, Addison Wesley Longman, USA.</p>	Recommended supporting books and references (scientific)
<p>You tube - http://www.damagate.com/vb/t144508/</p> <p>- James, K. Nelson, JR. 1998. User* Manual, Version 1.52, Addison Wesley Longman, USA.</p>	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng. Technologies
Name lecturer: zaid nori
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng. Technologies

Course Description Form 2023/2024

15-	Course Name	Engineering Analysis
16-	Course Code	
17-	Semester / Year	2024/2023
18-	Description Preparation Date:	2024/6/1
19-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
20-	Number of study hours (total)/number of units (total)	30 Week /5units
21-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. zaid nori

12. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

13. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√

g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

18. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Engineering Analysis, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Engineering Analysis and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√

F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

19. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1-2	6	Knowledge and understanding	Ordinary differential equations ,liner differential equations , homogeneous linear equations of the second order , general solution . basis initial value problem , homogeneous linear differential equations of arbitrary order n , equations of order n with constant coefficients , non homogeneous equations solving by the method of undetermined coefficient .	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
3-4-5	9	Knowledge and understanding	Applications of O.D.E of undetermined coefficient method in:; beam & column , beam-column, beam on elastic foundation , modeling : forced oscillation (dynamics analysis)	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	3	Knowledge and understanding	√	Singular function : unit step function , unit impulse function , unit moment function .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7-8	6	Knowledge and understanding	√	Applications of O.D.E of integration method in beams .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

				discussing them collectively					
		thinking skills	√	Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√	An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

9-10-11	9	Knowledge and understanding	√	Fourier series ,Eular formulas , fourier series for any period (2L) , odd and even functions , Half – rang expansion , applications of fourier series in construction engineering .	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12-13-14-15-	12	Knowledge and understanding	√	Partial differential equations , one dimensional wave equation , free longitudinal vibration of beam, free transverse vibration of beam, one dimensional heat equation , consolidation equation , two dimensional Laplace equation .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)							
16-17-18-19-	12	Knowledge and understanding	√	Numerical methods , numerical methods in non linear equations , solution of equations by iteration :fixed-point method , Newton – Raphson method Interpolation: ,linear interpolation , quadratic interpolation, Newtons forward difference formula , Newtons backward difference formula, lagrangian interpolation , numerical integration & differentiation	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
20-21-22-	9	Knowledge and understanding	√	Numerical methods for differential equation , Euler method , Modified Euler method , Runge Kutta method -4th order .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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23-24	6	Knowledge and understanding	√	Numerical methods for differential equation , Euler method , Modified Euler method , Runge Kutta method -4th order .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
25-26-27-28-29-30-	18	Knowledge and understanding	√	Application of engineering analysis and numerical methods in Matlab program	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

20. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.				
quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	0%	20%	50%

11. Learning and teaching resources	
1. Advanced engineering mathematics / Erwin kreyszig	Required te
2. Applied mathematics for engineering & physicists / pipes & harvill	Main refere
3. Numerical methods for engineers / S.C. Chapra & R. P. Canale	Recommen journals, rep
You Tube, Electronic websites	Electronic r



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: Ali Abdulhussein Aldhalemi
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

22-	Course Name	Highway Engineering
23-	Course Code	
24-	Semester / Year	2024/2023
25-	Description Preparation Date:	2024/6/1
26-	Available Attendance Forms:	Lectures in the presence of students (Online if necessary) and Lab.
27-	Number of study hours (total)/number of units (total)	30 week /6unit
28-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	dr. ali abdu alhusain alialdhalemi@atu.edu.iq

14. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√

A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of transportation (Highway) engineering and all sectors	√
D4	The ability to adapt to similar specializations (Traffic engineering, pavement engineering, architectural Engineering, Environment Engineering.....)	√

15. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).

a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

21.Objectives :

The student must learn the geometrical engineering design of highways , The structural design of flexible & rigid pavements . The student must learn also, All the site works that may be needed for road construction & maintenance of pavements . The student can be able to accomplish the important tests of soil layers , asphalt and concrete pavements as well as he will have an important information about airport & railway engineering .

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of road paving specialization and keeping pace with rapid scientific development through direct contact with decision-makers in road paving engineering all over the world and direct contact with colleges and institutes specialized in road paving.	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits to domestic highways, seminars and training in sector projects and companies in the building and construction of roads.	√
B - Modernizing and opening laboratories by providing them with the latest technical devices and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√

	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

22. Course structure

Week	Hours	Required learning outcomes	Syllabus	Learning method	Direct asses metho
1	4	Knowledge and understanding	Highways classification according to their functions , locations, and pavements types	The direct method is .through lectures	Written tests
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation
2	4	Knowledge and understanding	Highway alignments and alternatives , points of inflections , topography terrain maps , cross-section elements , profiles , and horizontal and vertical curves	The direct method is .through lectures	Written tests
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation
3	4	Knowledge and understanding	Horizontal curves , angle of inflections , middle ordinates , external distance , centrifugal forces , minimum radius and design speed .	The direct method is .through lectures	Written tests
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
4	4	Knowledge and understanding	√	Spiral curves and super elevation concepts ..	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
5	4	Knowledge and understanding	√	Vertical curves , crest and sag curves , under crossing clear distance , minimum length and grades .	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
6	4	Knowledge and understanding	√	Sight distances , stopping and passing , at grade intersection , at vertical curves , relation between length of curve and required sight distance and between	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams

		thinking skills	√	middle ordinate distance .	Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
7	4	Knowledge and understanding	√	Traffic volumes , counting , traffic volume correction factors , level of service (LOS) , AADT, ADT , DHV ,	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
8&9	4	Knowledge and understanding	√	Traffic loads ,equivalent single axle load (ESALs) , tandem axle load, tridem axle loads , load damage factor , growth factor , stresses on pavements .	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
10-11	8	Knowledge and understanding	√	Design of flexible pavement, pavement layers , charts for design	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
12-13	8	Knowledge and understanding	√	Design of rigid pavement, pavement layers , charts for design	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
14	4	Knowledge and understanding	√	Railway cross section elements and embankments , specifications	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
15	4	Knowledge and understanding	√	Airports orientations , runway and taxiway specifications , signals and marking .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams

					discussing them collectively		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
16	4	Knowledge and understanding	√	Sub-grade works , grading , cut and fill sections , soil classification (AASHTO , UCS) , Leveling and compactions	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
17	4	Knowledge and understanding	√	Sub-base works , stockpiles , specifications , spreading , leveling and compactions	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
18-19	8	Knowledge and understanding	√	Base works , macadam and untreated base , stabilized base (bitumen , lime , cement treated base) .	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams

		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
20	4	Knowledge and understanding	√	TrPrime and tack coats, specifications and applications ..	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
21	4	Knowledge and understanding	√	Asphalt plants (types and units) , crushers	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

22	4	Knowledge and understanding	√	Asphalt mixtures (Hot and Cold) , specifications	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
23	4	Knowledge and understanding	√	Job mix , preparations in laboratory and plants , applications in the fields	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
24-25	8	Knowledge and understanding	√	Asphalt pavement constructions , placing , spreading , pavers , rollers , field tests , leveling and thickness controlling .	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

26	4	Knowledge and understanding	√	Super pave asphalt , specifications , aggregate grading , binder standards (PERFORMANCE GRADING PG) , new tests of bitumen and mixtures .	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
27-28	8	Knowledge and understanding	√	Rigid pavement , layers , fixed and slip forms , joints and reinforcing , control of leveling , and finishing .	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
29	4	Knowledge and understanding	√	Drainage systems , culverts , siphon , ditches and filters	The direct method is through lectures.	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
30	4	Knowledge and understanding	√	Highway furniture and control devices	The direct method is through lectures.	√	Written tests

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion file and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written

Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
20	0	10	0	50

14-Learning and teaching resources

1. Road design manual / 2007	Re
2. A Policy on geometric design of highway and streets / 2001	
3.The handbook of highway engineering / 2006	M
4.Super pave fundamentals , FHWA , NHI # 131053	Re re
5.You Tube, Internet's references	El



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng. Technologies
Name lecturer: mohammed qasim
Scientific title: Lecturer
Academic qualification: master
Work location: Building & Construction Eng. Technologies

Course Description Form 2023/2024

29-	Course Name
	Analysis & Design of Reinforced Concrete Structures (1)
30-	Course Code
31-	Semester / Year
	2024/2023
32-	Description Preparation Date:
	2024/6/1
33-	Available Attendance Forms:
	Lectures in the presence of students and online if necessary
34-	Number of study hours (total)/number of units (total)
	30week/6units
35-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)
	م . محمد قاسم رحيم : mohammed.shaaban@atu.edu.iq

16. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√

A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

17. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	

e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

23. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of the Bui Analysis & Design of Reinforced Concrete Structures (1) Ilding Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Analysis & Design of Reinforced Concrete Structures (1) and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√

	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

24. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1-2-3	12	Knowledge and understanding	Analysis of the structures: Loads, Load combinations, Safety provisions of the ACI code, Analysis of beams and frames, ACI moment coefficients, Arrangement of live load.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
4-5	8	Knowledge and understanding	Materials: Properties of concrete in compression, Modulus of elasticity, Stiffness, Properties of concrete in tension, Shrinkage and Temperature effects, Reinforcing steels for concrete.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research	Completion files and performance assistant	Interviews or questionnaires to

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6-7-8-9-10-11	24	Knowledge and understanding	√	Flexural analysis and design of beams: Reinforced concrete beam behavior, Analysis of tension-reinforced rectangular beams, Design of rectangular beams, Design aids, Practical considerations in design of beams, Rectangular beam with tension and compression reinforcement, T-beams.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12-13-14-15-	16	Knowledge and understanding	√	Shear and diagonal tension in beams: Diagonal tension in homogeneous elastic beams, Reinforced concrete beams without shear reinforcement, Reinforced concrete	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√	beam with web reinforcement, ACI code provisions for shear design, Effect of axial forces, Deep beams.	Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

16-17	8	Knowledge and understanding	√	Analysis and Design for torsion: Torsion in plain concrete members, Torsion in reinforced concrete members, Torsion plus shear, ACI code provisions for torsion design.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18-19-20-21-	16	Knowledge and understanding	√	Bond, Anchorage and development length: Fundamentals of flexural bond, Bond strength and development length, ACI- code provisions for development of tension reinforcement, Anchorage of tension bars by hooks, Development of bars in compression, Bar cutoff and bend points in beams, bar splices.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)								
22-23-24-25-26-	20	Knowledge and understanding	√	Short columns: Axial compression, Lateral ties and spirals, Compression plus bending of rectangular columns, Strain compatibility analysis and interaction diagrams, Circular columns, ACI-code provisions for column design, Design aids, Biaxial bending, Load contour method.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27-28-29-30-	16	Knowledge and understanding	√	Serviceability: Cracking in flexural members, ACI-code provisions for crack control, Control of deflections, Immediate deflections, deflections due to long term loads, ACI-code provisions for control of deflections, Deflections due to	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√	shrinkage and temperature changes.	An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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25. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

<p>Requirements for Structural Concrete and Commentaries es" by A.H. Nilson, D. Darwin, C.W. Dolan, 14th ete ACI 318-05 Code Edition." J.C. McCormac and Jame</p>	<p>Required textbooks</p>
<p>ete: A Fundamental Approach", by E.G. Nawy, 5th mentals" by P.H. Ferguson, J.E. Breem, J.O. Jirsa, John 8. ed Concrete" by Russell S. Fling, John Wiley & Sons.</p>	<p>Main references (sources)</p>
<p>by C.K. Wang, and C.G. Salmon, 6th Ed., Harper Collins. nd Design" by M.N. Hassoun, Addison Wesley. R. Park and W.L. Gamble, Second Edition, Wiley–</p>	<p>Recommended supporting books and references (scientific journals, reports....)</p>
<p>by Chu-Kia Wang and Charles G. Salmon, th edition, Limbrunner & Aghayere</p>	<p>Electronic references, Internet sites</p>



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: Abbas Sahib
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

Soil Mechanics (Theoretical)

36-	Course Name	Soil Mechanics
37-	Course Code	
38-	Semester / Year	2024/2023
39-	Description Preparation Date:	2024/6/1
40-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
41-	Number of study hours (total)/number of units (total)	8 units/30 week
42-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. Abbas Sahib

18. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

19. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√

g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

27. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Soil Mechanics the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of <u>Soil Mechanics</u> and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√

F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

28. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1-2	6	Knowledge and understanding	Soil formation , Types of soil	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
3	3	Knowledge and understanding	Geotechnical properties , Mineralogical composition	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research	Completion files and performance assistant	Interviews or questionnaires to

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4-5-6	9	Knowledge and understanding	√	Weight –volume relationships , Grain size distribution , Soil classification	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7-8-9	9	Knowledge and understanding	√	Hydraulic properties , Permeability of soil	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

10-11	6	Knowledge and understanding	√	Seepage & flow net construction	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	3	Knowledge and understanding	√	Effective stress & Pore water pressure	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)								
13-14-15-16-	12	Knowledge and understanding	√	Soil stabilization , Mechanical and chemical stabilization)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
17-18	6	Knowledge and understanding	√	Contact pressure and stress distribution	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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19-20-21-22-	12	Knowledge and understanding	√	Compressibility & Consolidation , Consolidation test , Settlement analysis	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
23-24-25-26-	12	Knowledge and understanding	√	Shear strength of soil, Mohr-Coulomb theory , Cases of shearing tests , Types of shearing tests .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)							
27-28	6	Knowledge and understanding	√	Lateral earth pressure and retaining structures	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
29-30-	6	Knowledge and understanding	√	Special types of soils , Collapsing & swelling soils	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29. Course structure (partial)										

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	2	Knowledge and understanding	√	Field collection of a soil sample	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	2	Knowledge and understanding	√	Water content determination	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	2	Knowledge and understanding	√	Liquid &Plastic limits test ,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	2	Knowledge and understanding	√	Shrinkage limit test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant	√	Interviews or questionnaires to	

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

5	2	Knowledge and understanding	√	Specific gravity of soil solids	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	2	Knowledge and understanding	√	Total soluble salts & Organic matter content	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)							
7	2	Knowledge and understanding	√	Particle size analysis (Mechanical method)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
8-9	4	Knowledge and understanding	√	Particle size analysis (Hydrometer method)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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10	2	Knowledge and understanding	√	Classification of soil	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11-12	4	Knowledge and understanding	√	Moisture- unit weight relationship (Compaction test)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)								
13-14	4	Knowledge and understanding	√	Determination of in-place density of soil	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15-16	4	Knowledge and understanding	√	Permeability tests (Constant & Falling head)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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17-18-19-	6	Knowledge and understanding	√	Consolidation test	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
20	2	Knowledge and understanding	√	Unconfined compression test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)							
21	2	Knowledge and understanding	√	Direct shear test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
22-23-24-	6	Knowledge and understanding	√	Triaxial compression test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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25-26	4	Knowledge and understanding	√	California Bearing Ratio test	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
27	2	Knowledge and understanding	√	Collapsing test	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
28-29	4	Knowledge and understanding	√	Swelling test	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation

		to employability and personal development)					
30	2	Knowledge and understanding	√	Relative density determination	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral written exams, reports, etc.

retical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	F
	%10	%10	%10	%10	%10	

14 - Learning and teaching resources

Soil Mechanics (Principles & Practice) / G.E. Barnes .1	Require
Principles of Geotechnical Engineering / B.M. Das .2	
Soil Mechanics and Foundation Engineering / B. Singh , S. Prakash	
Engineering Properties of Soils and their Measurements / J.E. Bowle	Reco referen
Soil Testing for Engineers / T.W. Lamb	Elec



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: Muhammad Karim
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

Concrete Technology (Theoretical)

43-	Course Name	Concrete Technology
44-	Course Code	
45-	Semester / Year	2024/2023
46-	Description Preparation Date:	2024/6/1
47-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
48-	Number of study hours (total)/number of units (total)	6 units/30week
49-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. Muhammad Karim

20. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√

A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

21. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	

e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

30. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of **Concrete Technology2** the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Concrete Technology2 and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√

	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

31. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1	2	Knowledge and understanding	General information about composition of concrete & properties of fresh concrete.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
2	2	Knowledge and understanding	Properties of hardened concrete	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research	Completion files and performance assistant	Interviews or questionnaires to

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3-4	4	Knowledge and understanding	√	Kinds of strength	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5-6	4	Knowledge and understanding	√	Factors affecting strength of hardened concrete.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

7-8	4	Knowledge and understanding	√	Factors affecting test results of strength of hardened concrete	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9-10-11-12-13-14	12	Knowledge and understanding	√	Concrete mix design	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)								
15-16	6	Knowledge and understanding	√	Field adjustment.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

17-18	4	Knowledge and understanding	√	Elasticity, dimensional stability (shrinkage & creep).	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19-20-21-22-	8	Knowledge and understanding	√	Durability of concrete.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)								
23-24-25-26-	8	Knowledge and understanding	√	Special types of concrete.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27-28-29-30-	8	Knowledge and understanding	√	In-situ tests	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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11. Course structure(partice)

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1	2	Knowledge and understanding	Review about cement and aggregates tests.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
-4-3-2 5	8	Knowledge and understanding	Fresh concrete tests: (Air content, Slump test, Compacting factor test, and V-B test).	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research	Completion files and performance assistant	Interviews or questionnaires to

					carried out in the field of .specialization			survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation	external assessmeters	
-8-7-6 -10-9 -12-11 -14-13	18	Knowledge and understanding	√	Factors affecting compressive strength of concrete: (a) Effect of water/cement ratio; (b) Effect of cement content; (c) Effect of age; (d) Effect of end condition of specimen and capping; (e) Effect of dimensions of specimen; (f) Effect of curing conditions (Normal curing, Untreated curing, Autoclaved curing, Hot water curing); and (g) Effect of shape of specimen.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
15	2	Knowledge and understanding	√	Indirect Splitting Tensile strength of concrete.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to

				discussing them collectively				survey employers' opinions	
		thinking skills	√	Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√	An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

16	2	Knowledge and understanding	√	Flexural test (Modulus of rupture) of concrete	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
17	2	Knowledge and understanding	√	Modulus of elasticity and Poisson's Ratio of concrete.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

		to employability and personal development)							
-19-18 -21-20 -22	10	Knowledge and understanding	√	Project about mix design of concrete using (ACI, BRITISH, and CP: 110) methods.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
24-23	4	Knowledge and understanding	√	Light weight concrete tests.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
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-26-25 -28-27 -30-29	12	Knowledge and understanding	√	In-situ Tests: (Rebound – Hammer Test, Ultrasonic Pulse Velocity Test, Load test, and Core test).	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion file and performan assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

713-Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.				
Quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	0%	20%	10%	50%

"of concrete", 3rd. Ed., A Pitman International Text	Required textbooks (methodology, if any)
"Composition and properties of concrete", McGraw-Hill	Main references (sources)
ican (ASTM) Standards for concrete testing.	Recommended supporting books and references (scientific journals, reports....)
Lamb	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Technologies
engineering
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Technologies
engineering

Course Description Form 2023/2024

50-	Course Name	Theory of structures
51-	Course Code	
52-	Semester / Year	5/3
53-	Description Preparation Date:	29/6/2024
54-	Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
55-	Number of study hours (total)/number of units (total)	30 week/5unit
56-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Hawraa Khalid Hannon

22. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to define all types of structures and their stability.	√
A2	define the methods of determination of the structure deformation under the load.	√
A3	study the methods of analysis and internal forces determination of determinate and indeterminate structures .	√
A4	study the methods used for analysis of structural elements due to moving loads using the influence lines.	
A5	learn the methods of structural analysis and the theories used, application of different methods of structural analysis and the methods of presenting the actual structure, connection between the theoretical analysis and the actual engineering structures..	
Subject-specific skills		
B1	Able to find out internal forces in structural members.	√
B2	can make the shear force ,axial force and bending moments diagrams for beams, frames.	√
B3	make the approximate analysis for trusses and frames.	√
B4	study and know how to find rotation (slopes) and deflection in different structural members and frames.	√
B5	Ready to design concrete and steel members .	
B6	Has the ability to recognize the correct execution of structural members during construction	
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		

D1	teaching the students types of loads applied on different structural members .	√
D2	teaching the students types of structural members and types of supports.	√
D3	Showing the students through an examples the members in buildings and their behavior .	√
D4	Demonstrates knowledge of the philosophies of transferring loads through structural members.	√
D5	Demonstrates knowledge of the stability of members .	
D6	teaching the students the determinancy and indeterminacy of different structural members (i.e, beams frames ...etc.).	
D7	Teaching students how to find out deflection and slopes of beams frames through the following methods:	
D8	Double integration method, energy methods , slope–deflection method ,moment area method , unit –load method , moment distribution method and so on .	
D9	showing the students ready softwares to make confidence to them through comparison with what they were studied.	

23. Teaching and Learning Strategies

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by showing the students how the construction members exposed to external loads .This can be done by films or videos or by the ready structural software.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√

i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

32. The student will be able to define all types of structures and their stability, define the methods of determination of the structure deformation under the load , study the methods of analysis and internal forces determination of determinate and indeterminate structures ,study the methods used for analysis of structural elements due to moving loads using the influence lines. The student will also learn the methods of structural analysis and the theories used, application of different methods of structural analysis and the methods of presenting the actual structure, connection between the theoretical analysis and the actual engineering structures

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of civil engineering techniques and keeping pace with rapid scientific development through direct contact with decision-makers for civil engineering in all parts of the world and direct contact with specialized colleges and institutes..	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to local project implementation sites, seminars, and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings	√
	D2	Continuous review and evaluation of the activities of students and faculty members	√
	D3	Encouraging student initiatives and achievements in various academic, artistic and religious fields with faculty members	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
	G1	Organizing conferences, seminars and educational courses	√

G- Activating and strengthening ties with public government agencies and the private sector	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√
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12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method
2-1	6	Knowledge and understanding	√	Introduction - Definition of engineering structures Classification of engineering structures Forces applied on engineering structures Types of loads and supports	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
4-3	6	Knowledge and understanding	√	Stability and determinacy of structures - Method used for stability of engineering structure - Stability and determinacy of beams --Stability and determinacy of trusses -Stability and determinacy of rigid frames	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
-7-6-5 10-9-8	18	Knowledge and understanding	√	Statically determinate structures -Statically determinate beams -Drawing of shear force and bending moments diagram -Analysis of statically determinate truss -Statically determinate rigid frames	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant

				-Drawing of shear force and bending moments diagram	carried out in the field of .specialization		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
-12-11 13	9	Knowledge and understanding	√	Influence line for statically determinate structures	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
-15-14 16	9	Knowledge and understanding	√	Moving concentrated loads maximum Criteria for Absolute maximum bending moment	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
18-17	6	Knowledge and understanding	√	Approximate analysis for statically indeterminate structures	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
-20-19 21	9	Knowledge and understanding	√	Elastic deformation of structures (Beams, Truss, Rigid frames) -Virtual work method (Unit load method) -Moment area method	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
-23-22 25-24	12	Knowledge and understanding	√	Slope-deflection method for statically indeterminate beams and rigid frames -Without joint translation -With joint translation	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation
-27-26 29-28	12	Knowledge and understanding	√	Moment distribution method without joint translation -Fixed-end moment -Element stiffness -Distribution factor, carry-over factor	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams

				-Distribution of external moment applied to a joint The process of locking and unlocking :one joint	discussing them collectively		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√	-The process of locking and unlocking :two joint -Modified stiffness factor -Moment distribution method with joint translation -Analysis of statically indeterminate rigid frames with one degree of freedom	An interactive method by dividing students into small groups	√	Projects and observation
30	6	Knowledge and understanding	√	Computer applications	The direct method is .through lectures	√	Written tests
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation

13-Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Assignment	classwork	Mid Exam	Quizzes	Final exam
10	10	10	10	10	50

s / Yuan Y. Hsieh	Required textbooks
C. Hibbeler	Main references (sources)
H.G. Megson	Recommended supporting books and references (scientific journals, reports....)
sis/ Kenneth M. Leet, Chia Ming Hang and Anne M. Giberl	
	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction engineering Technologies
Name lecturer: Israa Rahman
Scientific title: lecturer
Academic qualification: Doctorate
Work location: Building & Construction engineering Technologies

Course Description Form 2023/2024

1- Course Name	Environmental engineering
2- Course Code	
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/1
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary) and Lab.
6- Number of study hours (total)/number of units (total)	9 unit /30 week
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. Israa Rahman Ghanim Email:esraarahman6@gmail.com

8. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization .	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies,)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).

a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.

√

b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of concrete technology, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of environmental engineering and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in environmental and sustainability engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to construction and building projects for water and wastewater treatment plants.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√

	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1	3	Knowledge and understanding	Introduction	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
2	3	Knowledge and understanding	Environmental measurements	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters

4-3	6	Knowledge and understanding	√	Material & energy balance	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6-5	6	Knowledge and understanding	√	Environmental Chemistry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8-7	6	Knowledge and understanding	√	Eco system	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to	

								survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
9-10	6	Knowledge and understanding	√	Environmental risks	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
11	3	Knowledge and understanding	√	Water Quality	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12-13-14-15	12	Knowledge and understanding	√	Water Supply	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16	3	Knowledge and understanding	√	Water Distribution system	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing	√	Oral exams	√	Interviews or questionnaires to	

					research papers and discussing them collectively				survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18-17	6	Knowledge and understanding	√	Water Intake structure , pumping station for water and wastewater	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-20-19 22-21	12	Knowledge and understanding	√	Water Treatment	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

					discussing them collectively					
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24-23	6	Knowledge and understanding	√	Wastewater treatment	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-25	6	Knowledge and understanding	√	Wastewater Disposal system design	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27-28	3	Knowledge and understanding	√	Air resources energy	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29	3	Knowledge and understanding	√	Solid waste management	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
30	3	Knowledge and understanding	√	Green Engineering	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
Course structure (practical)										
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	3	Knowledge and understanding	√	Temperature test , Taste and odor test	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams		Interviews or questionnaires to survey employers' opinions	

					discussing them collectively				
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
2	3	Knowledge and understanding	√	Color test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
4-3	3	Knowledge and understanding	√	Determination of : Total solids (T.S.), Volatile Solid (V. S.) , Non- Volatile solid , Suspended solids (S.S.) ,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions

		thinking skills	√	dissolved Solids (D.S.) and settle-able solids	Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√			An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
6-5	3	Knowledge and understanding	√	Electrical Conductivity (E.C.) test and pH Value test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8-7	3	Knowledge and understanding	√	Hardness test and Sulphate test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9-10	3	Knowledge and understanding	√	Chloride test and residual Chlorine test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	3	Knowledge and understanding	√	Dissolved Oxygen test and Organic Matter test	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12-13-14-15	3	Knowledge and understanding	√	Biochemical oxygen Demand test (BOD), Chemical Oxygen Demand (COD), Oil and grease Test, Phosphate test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16	3	Knowledge and understanding	√	Phenols test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18-17	3	Knowledge and understanding	√	Nitrogen Compound determination test : Nitrate (NO₃), Nitrite (NO₂)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-20-19 22-21	3	Knowledge and understanding	√	Heavy Metals Tests (Atomic Absorption Method)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24-23	6	Knowledge and understanding	√	Continue Heavy Metals Tests (Atomic Absorption Method)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-25	6	Knowledge and understanding	√	Jar Test	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27-28	6	Knowledge and understanding	√	Radiation (α , γ and β)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29	3	Knowledge and understanding	√	Alkalinity	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
30	3	Knowledge and understanding	√	Noise Measurement	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
%10	%10	%10	%10	%10	%10	40%

14. Learning and teaching resources

Davis M. I. and S. J. Masten “ Principles of environmental engineering and science “ Mcgraw – Hill companies Inc. , USA , 2004.	Required textbooks (methodology, if any)
Swamee P. K. and A. K. Sharma “ Design of water supply pipe network” Wiley interscience , A. John Wiley & sons Inc. Publication , 2008.	Main references (sources)
Mihelcic J. R. and J. B. Zimmorman “ Environmental engineering fundamentals, Sustainability , Design”, john Willey & sons, USA , 2010.	Recommended supporting books and references (scientific journals, reports....)
Academia, Google Scholar	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: mohameed husain
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

8- Course Name	Foundation Engineering Technology
9- Course Code	
10- Semester / Year	2024/2023
11- Description Preparation Date:	2024/6/1
12- Available Attendance Forms:	Lectures in the presence of students and online if necessary
13- Number of study hours (total)/number of units (total)	30 week / 6 units
14- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Mohammed hussin

10. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
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A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

11. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√

c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

15. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Foundation Engineering Technology, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Foundation Engineering Technology and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√

	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

16. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1-2-3-4-5	20	Knowledge and understanding	√	Soil investigation : Collecting samples , No. of holes , Depth of bore holes , Laboratory tests , . Report writing	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-8-7-6-10-9-11	24	Knowledge and understanding	√	Bearing capacity theories , Factors affecting bearing capacity , Settlement calculations .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

12-13-14-15	16	Knowledge and understanding	√	Design of shallow foundations .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-17-16 -19-18 20	20	Knowledge and understanding	√	Deep foundations ,Types of piles , Method of execution, Bearing capacity of single pile , Bearing capacity of pile group , Design of piles , Design of piles cap , .. Settlement of piles	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

21	4	Knowledge and understanding	√	Lateral earth pressure	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
23-22	8	Knowledge and understanding	√	Design of concrete retaining walls .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

25-24	8	Knowledge and understanding	√	.Design of sheet piles	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

27-26	8	Knowledge and understanding	√	Slope stability ,Types & factors affecting slope stability, Methods of analysis . for clays & sand	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28	4	Knowledge and understanding	√	Soil improvement , Soil improvement by compaction & additives .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29-30	8	Knowledge and understanding	√	Introduction to soil reinforcement .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

17. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

18. Learning and teaching resources	
Principles of Foundation Engineering , Fifth Edition , By Braja-M. Dass , California University 2006 .	Required textbooks
1-Foundation Analysis & Design / Bowles 2-Foundation Engineering / Peck , Hunson & Tharnborm	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: rusul abed al hadi
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

15-	Course Name	Construction Drawing
16-	Course Code	
17-	Year	2024/2023
18-	Description Preparation Date:	2024/6/1
19-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
20-	Number of study hours (total)/number of units (total)	30 week / 2 units
21-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	rusul abed al hadi

12. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√

A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

13. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

19. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Construction Drawing , the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Construction Drawing and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√

	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

20. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1	3	Knowledge and understanding	Introduction to define the civil drawing & all application in engineering & industrial fields between the engineer & worker	The direct method is through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
2	3	Knowledge and understanding	Concrete drawing & how to take the longitudinal & cross sections in multistory buildings . Show details of roofs , beams , columns , stairs , footing .	The direct method is through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters

3-4-5	9	Knowledge and understanding	√	Reinforced concrete footings , Wall footing , Isolated , Combined , Strap , Continuous , Raft foundations .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	3	Knowledge and understanding	√	Reinforced concrete columns and cross .sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

7-8	9	Knowledge and understanding	√	Shear walls and staircase, type of staircase, reinforcement details	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-10-9 11	9	Knowledge and understanding	√	Reinforced concrete beams : Simple beam , simple beam with cantilever , fixed beam , Continuous beam , Girder, type of reinforcement cut-of and bent-up method.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-13-12 15-14	12	Knowledge and understanding	√	Reinforced concrete slabs (Types of slabs) :	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	One way slabs , Two way slabs , Flat slabs , Ribbed & hollow – block slabs with all reinforcement details.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√			Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√			An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16	3	Knowledge and understanding	√	Building joints , Types of joints , Expansion joints , Construction . joints	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√			The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√			Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√			An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

17	3	Knowledge and understanding	√	Introduction to define the steel drawing, steel column base plat connection	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18	3	Knowledge and understanding	√	Beam – column connections (Riveted , Welded , Bolts)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19-20	6	Knowledge and understanding	√	Architectural details : Floors & roofs types , Their materials , Finishing methods ,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	Doors & windows , Types of doors & windows according to their uses .	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21-22	6	Knowledge and understanding	√	Architectural details : Floors & roofs types , Their materials , Finishing methods , Doors & windows , Types of doors & windows according to . their uses	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

23	3	Knowledge and understanding	√	Elevators	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24-25-26-27	12	Knowledge and understanding	√	Municipal engineering drawing :Water distribution systems : Internal water networks for building (cold & hot) , Water treatment station , Sewage network systems for building .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28-29-30	9	Knowledge and understanding	√	Irrigation works drawing : Regulators , Pipes , Box culverts ,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	Siphon , Weirs , . . Bridges	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

21. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

22. Learning and teaching resources	
1-Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI 315-747) . 2- Reinforced Concrete Designer’s Handbook / Reynolds , C.E. & Steed Man . J.C. 3- Foundation Analysis & Design / Bowles J.E. 4- A Manual of Engineering Drawing for Students & Drafts / French . T.E. 5-Structural Details in Concrete / M.Y.H. Bangash 6-Irrigation Principles & Practices / Israclson . 7-The design of prestressed concrete bridges / ROBERT BENIM 8-Detailing for steel construction, second edition, AISC.	Required textbooks
9-الكود المصري لتصميم المشآت الكونكريتية رقم 203 / دليل التفاصيل الانشائي-	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
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Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: atheer hilal
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

1- Course Name	Design of Steel Structures
2- Course Code	
3- Year	2024/2023
4- Description Preparation Date:	2024/6/1
5- Available Attendance Forms:	Lectures in the presence of students and online if necessary
6- Number of study hours (total)/number of units (total)	30 week / 5 units
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Atheer hilal

14. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

15. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√

b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

23. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Design of Steel Structures, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Design of Steel Structures and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√

	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

24. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1-2	6	Knowledge and understanding	Introduction: classification of steel structures Structural steel: scope of use, properties and behavior, merits and demerits, shapes of rolled sections; Loads and load combinations; design approaches and philosophies	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
4-3	6	Knowledge and understanding	Tension members: Types, sections and shapes, net & effective net area, design of tension members according to AISC ASD ; examples & problems.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters

7-6-5	9	Knowledge and understanding	√	Compression members: introduction, Euler's formula for buckling, allowable compressive stresses according to AISC ASD; Design of compression members: using ASD equations, using allowable stress & allowable load tables, design of laced columns and other built-up sections, column splices examples & problems.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10-9-8	9	Knowledge and understanding	√	Beam-columns: introduction, stresses in beam-columns, effective length of columns, design of beam-columns according to AISC ASD, method of determination initial trial section, method of equivalent load, examples & ..problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

-12-11 -14-13 15	15	Knowledge and understanding	√	Beams: types & sections; review of beam theory, local buckling considerations, lateral torsional buckling considerations; allowable bending stresses & shear stresses according to AISC ASD, local web yielding, deflection limitations according to AISC ASD, design of gantry girders, design of beams using tables & charts; examples & ...problems	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
17-16	6	Knowledge and understanding	√	Design of column base plates: base plates of axially loaded columns; design of base plates under axial load and moment (cases of eccentricity).	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18-19	6	Knowledge and understanding	√	Simple connections: modes of failure,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to	

				bearing type connections, friction (or slip critical) type connections, ASD design requirements for bolted, riveted & welded connections; problems.				survey graduates' opinions		
		Subject-specific skills	√			The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√			Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√			An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
-21-20 22	9	Knowledge and understanding	√	Framed connections (welded and bolted): Classification of framing systems according to AISC; Design of different types of beam-to-beam and beam-to-.column connections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√			The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√			Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√			An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters

-24-23 25	9	Knowledge and understanding	√	Design of trusses: Types; Load Calculation; roofing sheets, sag rods, purlins, design of tension & compression truss ..members	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27-26	6	Knowledge and understanding	√	Introduction to the design of plate girders: dimensioning flanges and webs, intermediate stiffeners, bearing stiffeners.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-29-28 30	9	Knowledge and understanding	√	Introduction to computer-based programs for the structural design and	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	analysis; comparative review of educational and professional software packages.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

25. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.				
quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

26. Learning and teaching resources	
1.Applied Structural Steel Design, L. Spiegel & G.E. Limbrunner, 4th ed., Prentice Hall, 2002. 2.Manual of steel construction, 13th ed., American Institute of Steel Construction, 2005. 3.Structural Steel Designer’s Handbook, R. L. Brockenbrough, F. S. Merritt, 3rd ed., McGraw-Hill, 1994.	Required textbooks
Building Design and Construction Handbook ; Frederick S. Merritt (Deceased) Jonathan T. Ricketts, Sixth Edition, McGRAW-HILL.	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Technology
Engineering
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Technologies
engineering

Course Description Form 2023/2024

8- Course Name	Computer Applications (3)
9- Course Code	
10- Year	2023-2024
11- Description Preparation Date:	29/6/2024
12- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
13- Number of study hours (total)/number of units (total)	30 week / 4 unit
14- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Hawraa Khalid Hannon

16. Expected learning outcomes of the program

Knowledge and understanding

A1	The student must learn the structural analysis & design for all structures types using the most recent methods including programs such as (STAAD. pro, CONCAD, SAFE, CSI Bridge, Prokon, Epanet and AutoCAD land development desktop).	√
Subject-specific skills		
B1	Able to find out internal forces in structural members.	√
B2	can make the shear force ,axial force and bending moments diagrams for beams, frames.	√
B3	make the analysis for trusses and frames.	√
B5	Ready to design concrete and steel members .	
B6	Has the ability to recognize the correct execution of structural members during construction	
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Teaching students the analysis and design of structural elements, trusses, and frames using several computer programs	√

17. Teaching and Learning Strategies

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments that are interesting to the students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
1-	The student will be able to use the various commands of the (STAAD pro) and deal with the graphical interfaces of it	√
2-	The student will be able to enter various data for any structure and extract results using staad pro	√
3-	The student will be able to analyze and design different structures using STAAD Pro	

4- The student will be able to use the (SAFE) to analyze and design slabs	
5- The student will be able to use (CSI bridge)	√
6- The student will be able to use (EPANT)	√

27. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of civil engineering techniques and keeping pace with rapid scientific development through direct contact with decision-makers for civil engineering in all parts of the world and direct contact with specialized colleges and institutes..	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to local project implementation sites, seminars, and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings	√
	D2	Continuous review and evaluation of the activities of students and faculty members	√
	D3	Encouraging student initiatives and achievements in various academic, artistic and religious fields with faculty members	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	3	Knowledge and understanding	√	Introduction - General description of the STAAD. pro structural program , Starting the Programs , Creating a new Structure .	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	3	Knowledge and understanding	√	Creating the Model (Beam, Column, Slab or plate, wall or surface and solid) using Graphical Interface .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

3-6	12	Knowledge and understanding	√	Menus bar (file, edit, view, tools, select, geometry)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7-10	12	Knowledge and understanding	√	Application examples of structural engineering in STAAD. pro program (analysis and design of concrete beam, column, slab, shear walls and multi-story building subjected to floor load, wind load, earthquake load temperature load and pre-stress load)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11-13	9	Knowledge and understanding	√	Analysis and design of foundation (isolated,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to	

				strip raft and pile footing using STAAD.pro and STAAD.foundation programs)				survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
14	3	Knowledge and understanding	√	Analysis and design of steel structure	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
15	3	Knowledge and understanding	√	Various applications in civil engineering using structural programs such as :	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions

		Subject-specific skills	√	1. Concad program for analysis and design of concrete beams.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16-17	6	Knowledge and understanding	√	2. SAFE program for analysis and design of slabs.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18-20	9	Knowledge and understanding	√	4. CSI Bridge for analysis and design of various types of bridges	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to	

					discussing them collectively				survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
21	3	Knowledge and understanding	√	. Prokon program.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
22-24	9	Knowledge and understanding	√	5. Epanet program for water supply network system	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions

					discussing them collectively				
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
25-28	12	Knowledge and understanding	√	6. AutoCAD land development desktop for roads design	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
29-30	6	Knowledge and understanding	√	Mini project .	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to

				discussing them collectively			survey employers' opinions
		thinking skills	√	Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)	√	An interactive method by dividing students into small groups	√	Projects and observation	external assessmeters

11. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
10	10	10	10	10	10	40

13. Learning and teaching resources

<p>STAAD. pro 2006 Getting Started & Examples Manual / esearch Engineer .</p> <p>2. Structural Analysis / R.C. Hibbeler .</p> <p>3. نظرية الانشاءات / د. عبدالفتاح ديوان و أحمد فهمي</p> <p>4. تصميم المنشآت الخرسانية والمنشآت مسبقة الجهد / د. علاء محمود حسين النجمي</p>	Required Texts
You tube	Websites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: zaid nori
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

1- Course Name	Estimation, Specifications and Contracts
2- Course Code	
3- Year	2024/2023
4- Description Preparation Date:	2024/6/1
5- Available Attendance Forms:	Lectures in the presence of students and online if necessary
6- Number of study hours (total)/number of units (total)	30 week / 6 units
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. zaid nori

18. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

19. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

28. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Estimation, Specifications and Contracts, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Estimation, Specifications and Contracts and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√

C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

29. Course structure

Week	Hours	Required learning outcomes	Name of the unit or topic	Learning method	Direct assessment method	Indirect assessment method
1-2	8	Knowledge and understanding	Introduction: engineering projects & estimation, definition of estimation, benefits of estimation, factors affecting cost estimation, types of estimation, practical examples on approximate estimation	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters
3	4	Knowledge and understanding	General rules in quantitative survey: Principles in selecting units of measurement for items, various units and modes of measurement for different items of works, details of quantities measuring.	The direct method is .through lectures	Written tests	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills		The subjective method is through preparing research papers and discussing them collectively	Oral exams	Interviews or questionnaires to survey employers' opinions
		thinking skills		Scientific seminars on the most important research carried out in the field of .specialization	Completion files and performance assistant	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)		An interactive method by dividing students into small groups	Projects and observation	external assessmeters

4	4	Knowledge and understanding	√	rate analysis, factors affecting the cost of materials and labour, Plants and equipment -hour costs based on total costs and Outputs, Overhead charges, rates for various items of construction of civil engineering works, problems and examples on rate analysis	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6-5	8	Knowledge and understanding	√	Methods of working quantities for various items of works, Measurement and abstract sheets and recording, excavation and fill works for wall footings, estimation of walls and other items of buildings up to D. P. C. level, methods used to calculate the length of various works: method of strips and center lines method, examples and .problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

8-7	8	Knowledge and understanding	√	Earthworks for various engineering projects: irrigation channels, roadway embankments, methods used for calculating earthwork quantities and volumes, Mass diagrams, calculations of excavation volumes due to cut works (grid leveling method and triangular method), examples and ..problems	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	4	Knowledge and understanding	√	Estimation of masonry works, basic units and materials used, Estimation of walls construction, damp proofing used, brick works, block works, stone works, examples and problems.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11-10	8	Knowledge and understanding	√	Estimation of concrete works, primary materials used, mixing of	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	concrete materials, types of concrete mixers, calculating quantities of concrete materials, examples and problems	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13-12	8	Knowledge and understanding	√	Estimation of concrete works quantities for spread . footings	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

14	4	Knowledge and understanding	√	Estimation of concrete works quantities for lintels, beams, roofs, columns and stairs	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	4	Knowledge and understanding	√	Estimation of form works quantities for lintels, beams, roofs, tie beams, columns and arches	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
17-16	8	Knowledge and understanding	√	Reinforcement calculations for beams, roofs,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	columns and footings, specifications	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19-18	8	Knowledge and understanding	√	Finishing works: types, estimation of outside and inside finishing works, plastering, painting, brick and stone coating, glass works, .specifications	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

20	4	Knowledge and understanding	√	Estimation of tiles works: tiles, mosaic, ceramic, porcelain, ... etc, specifications	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21	4	Knowledge and understanding	√	Estimation of sanitary, sewage, plumbing and electrical works.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
22	4	Knowledge and understanding	√	Estimation of materials used in flexible and rigid pavements,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	estimation of curbstones used in curbs	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
23	4	Knowledge and understanding	√	Estimation of materials used in industrial sheds and steel buildings, columns and base plates, beams and bearing plates, connections, floors ..and roofs	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

24	4	Knowledge and understanding	√	Machines and equipment used in executing various works, Cost of owning and operating construction machines; depreciation, investment and operational costs. Profits, payment and ..indirect project costs	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-25	8	Knowledge and understanding	√	Technical specifications: definition, scope, resources and types of specifications, role of specifications in engineering project quality and estimated cost, technical specifications for various works..	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	4	Knowledge and understanding	√	rate analysis, factors affecting the cost of materials and labour, Plants and equipment	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	-hour costs based on total costs and Outputs, Overhead charges, rates for various items of construction of civil engineering works, problems and	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of	√	Completion files and performance	√	Interviews or questionnaires to survey student	
27	4	Knowledge and understanding	√	Computer-aided estimation, Using spread sheet applications and other software packages in ..estimation	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

28	4	Knowledge and understanding	√	Valuation: Principles, purpose and function of valuation, Factors affecting the valuation of properties, Valuer ...and his duties	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

30-29	8	Knowledge and understanding	√	Contracts: definition, types of contracts, Identification of rules, standards, related to the contracts of civil engineering works and related items, general and special conditions for civil ...engineering works	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

30. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

31. Learning and teaching resources	
<p>1. تخمين ومواصفات الأعمال الإنشائية، المهندس غانم عبد الرحمن بكر.</p> <p>2. التخمين ومواصفات، مدحت فضيل فتح الله.</p> <p>3. شروط المقاولات لأعمال الهندسة المدنية بقسميها الأول والثاني، وزارة التخطيط والتعاون الإنمائي، 2005.</p> <p>4. المواصفات الفنية العامة، المكتب الاستشاري في معهد التكنولوجيا/بغداد، طبعة أولى.</p>	Required textbooks
<p>5. Construction, Planning & Technology, Rajiv Gupta, 1984.</p> <p>6. Construction, Planning Equipment & Methods, R.L. Peurifoy et al, 7th ed., 2006.</p> <p>7. General technical conditions and specifications, book -1 / 2, specification of materials workmanship of civil engineering works, 2nd ed., 2002.</p> <p>8. Building construction handbook, R. Chudley and R. Greeno, 5th ed., Elsevier Butterworth-Heinemann, 2004.</p> <p>9. Practical Standard Methods of Measurement Cost Estimating in the Design Stage, Hong-Kong, 2001,.</p> <p>10. The civil engineering handbook / edited by W.F. Chen and J.Y. Richard Liew, 2nd ed., by CRC press LLC, Ch. 1, Construction, 2003.</p>	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Technologies
engineering
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Technologies
engineering

Course Description Form 2023/2024

8- Course Name	Analysis and Design of Reinforced Concrete Structures (2)
9- Course Code	
10- Year	5/3
11- Description Preparation Date:	29/6/2024
12- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
13- Number of study hours (total)/number of units (total)	30 week / 5 unit
14- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	م . محمد قاسم رحيم الايمل: mohammed.shaaban@atu.edu.iq

20. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to define all types of structures and their stability.	√
A2	define the methods of determination of the structure deformation under the load.	√
A3	study the methods of analysis and internal forces determination of determinate and indeterminate structures .	√
A4	study the methods used for analysis of structural elements due to moving loads using the influence lines.	
A5	learn the methods of structural analysis and the theories used, application of different methods of structural analysis and the methods of presenting the actual structure, connection between the theoretical analysis and the actual engineering structures..	

Subject-specific skills

B1	Able to find out internal forces in structural members.	√
B2	can make the shear force ,axial force and bending moments diagrams for beams, frames.	√
B3	make the approximate analysis for trusses and frames.	√
B4	study and know how to find rotation (slopes) and deflection in different structural members and frames.	√
B5	Ready to design concrete and steel members .	
B6	Has the ability to recognize the correct execution of structural members during construction	

thinking skills

C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√

Generic and transferable skills (other skills related to employability and personal development)

D1	teaching the students types of loads applied on different structural members .	√
D2	teaching the students types of structural members and types of supports.	√

D3	Showing the students through an examples the members in buildings and their behavior .	√
D4	Demonstrates knowledge of the philosophies of transferring loads through structural members.	√
D5	Demonstrates knowledge of the stability of members .	
D6	teaching the students the determinancy and indeterminacy of different structural members (i,e, beams frames ...etc.).	
D7	Teaching students how to find out deflection and slopes of beams frames through the following methods:	
D8	Double integration method, energy methods , slope–deflection method ,moment area method , unit –load method , moment distribution method and so on .	
D9	showing the students ready softwares to make confidence to them through comparison with what they were studied.	

21. Teaching and Learning Strategies

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by showing the students how the construction members exposed to external loads .This can be done by films or videos or by the ready structural software.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√

k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.

32. Objectives Students will build on their knowledge of reinforced concrete design to understand the behavior of reinforced concrete and to design practical reinforced concrete components.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of civil engineering techniques and keeping pace with rapid scientific development through direct contact with decision-makers for civil engineering in all parts of the world and direct contact with specialized colleges and institutes..	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to local project implementation sites, seminars, and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings	√
	D2	Continuous review and evaluation of the activities of students and faculty members	√
	D3	Encouraging student initiatives and achievements in various academic, artistic and religious fields with faculty members	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

15- Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
-3-2-1 -6-5-4 8-7	24	Knowledge and understanding	√	Analysis and design of slabs: Types of slabs, Design of one way slabs, Temperature and shrinkage reinforcement, Behavior of two-way edge supported slabs, Two-way column supported slabs, Direct design method for column supported slabs, Depth limitation of the ACI code, Equivalent frame method, Shear design in flat plates and flat slabs, Openings in slabs.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-10-9 12-11	12	Knowledge and understanding	√		The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to	

				Slender columns: Concentrically loaded columns, Compression plus bending, ACI criteria for non sway frames versus sway frames, ACI moment magnifier method for non sway frames, ACI moment magnifier method for sway frames, Second-order analysis for slenderness effects.				survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
13-14-15	9	Knowledge and understanding	√	Strut and tie models: Strut and tie methodology, ACI provisions for strut and tie	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions

		thinking skills	√	models, Applications.	Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		
		Generic and transferable skills (other skills related to employability and personal development)	√			An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16-17-18	9	Knowledge and understanding	√	Design of reinforcement at joints: Beam-Column joints, Strut and tie model for joint behavior, Beam to girder joint.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√			The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√			Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√			An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19-20	6	Knowledge and understanding	√	Concrete building :systems Floor and roof systems, Panel, curtain and bearing walls, shear walls, ACI code provisions for .shear wall design	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√			The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21-22	6	Knowledge and understanding	√	:Seismic design Structural response, Seismic loading criteria, ACI special provisions for seismic .design	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24-23	6	Knowledge and understanding	√	:Prestressed Concrete Principles of prestressed concrete, Methods of prestressing, prestressing steel, concrete for prestressed .construction	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-25	6	Knowledge and understanding	√	Prestressed Concrete: Elastic flexural analysis, Flexural strength, Flexural design based on concrete stress limits.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28-27	6	Knowledge and understanding	√	:Prestressed concrete Shape selection, Tendon profiles. Loss .of prestress	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29-30	6	Knowledge and understanding	√	:Prestressed concrete Shear, diagonal tension and web .reinforcement	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

Quizzes	Assignment	classwork	Mid Exam	Quizzes	Final exam
10	10	10	10	10	50

16- Learning and teaching resources	
1. ACI 318-11: Building Code Requirements for Structural Concrete and Commentary 2. "Design of Concrete Structures" by A.H. Nilson, D. Darwin, C.W. Dolan, 14th Ed., McGraw-Hill.	Required Texts
3. K. Wight and J. G. MacGregor, Reinforced Concrete: Mechanics and Design, 5th Edition, Person/Prentice Hall, 2009. 4. E. G. Nawy, Reinforced Concrete: A Fundamental Approach, 6th Edition, Prentice Hall, 2009. 5. C.K. Wang, C.G. Salmon and J. A. Pincheira, Reinforced Concrete Design, 7th Edition, John Wiley & Sons, 2007. 6. J.C. McCormac and R. H. Brown, Design of Reinforced Concrete, 8th Edition, John Wiley & Sons, 2009. 7. M. N. Hassoun, A. Al-Manaseer, Structural Concrete: Theory and Design, 3rd Edition, Addison-Wesley, 2005. G.F. Limbrunner and	Recommended Texts
Academia, Google Scholar	Websites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: Hamza katiaa
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

17-	Course Name	
		ISO
18-	Course Code	
19-	Semester / Year	2024/2023
20-	Description Preparation Date:	2024/6/1
21-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
22-	Number of study hours (total)/number of units (total)	30 week / 4 units
23-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Name: Dr. Hamza katiaa

22. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√

A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

23. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	

e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

33. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of ISO, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of ISO and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√

	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

34. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	2	Knowledge and understanding	√	Quality definition , Standards , Factors .affecting quality	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	2	Knowledge and understanding	√	Quality determinate , Methods for determining quality.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

3	2	Knowledge and understanding	√	Total quality control , Definition , Historical , Elements.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	2	Knowledge and understanding	√	Systems used in total quality control & .management	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

5-6-7-8	8	Knowledge and understanding	√	Application of total quality control , Properties , Stages & Advantages of applications , Examples (total quality control in .industry of concrete) .	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10-9	4	Knowledge and understanding	√	Quality control of material used in production , Specification , Right decision , Example.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11-12-13	6	Knowledge and understanding	√	Quality control , Methods , Statistical method , Examples.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14-15	4	Knowledge and understanding	√	Quality control ..charts	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

16	2	Knowledge and understanding	√	..Quality control cost	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-18-17 20-19	8	Knowledge and understanding	√	Specification , specification & standardization fundamentals , Properties , Importance , Tolerance, Examples.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21-22	4	Knowledge and understanding	√	Rings of improving quality.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
23	2	Knowledge and understanding	√	International organization for standardization ISO , Definition , .Introduction , Using	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

24	2	Knowledge and understanding	√	Advantages of applications of ISO ..9000	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
25	2	Knowledge and understanding	√	ISO 9000 & total quality control management..	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-27	4	Knowledge and understanding	√	ISO 9000 family.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28	2	Knowledge and understanding	√	Civil engineering & .. ISO	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

29-30	4	Knowledge and understanding	√	ISO 14000 environmental .management system ..	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

35. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

36. Learning and teaching resources

<p>1- ISO 9000 / Rolhery</p> <p>2- طارق الشباكي الجودة في المنظمات الحديثة / مأمون الداركة -</p> <p>د. روعي الشريف / دليل ضبط الجودة في صناعة الخرسانة -3</p> <p>والبيئة الجودة أنظمة ادارة ISO 9000 , ISO 14000 / أ. د محمد عبدالوهاب العزاوي-4</p>	Required textbooks
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Applying ISO 9000 Quality Management Systems / Arora S.C.	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic
Accreditation
Accreditation Department



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng. Technologies
Name lecturer:
Scientific title:
Academic qualification:
Work location: Building & Construction Eng. Technologies

Course Description Form 2023/2024

24-	Course Name	The project
25-	Course Code	
26-	Semester / Year	2024/2023
27-	Description Preparation Date:	2024/6/1
28-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
29-	Number of study hours (total)/number of units (total)	8 week / 4 units
30-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	

24. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

25. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

37. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Systematic Training , the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Systematic Training and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√

	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

38. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1-8		Knowledge and understanding	√	Practical training in building & construction engineering (site . work)	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams		√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters		

39. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

40. Learning and teaching resources

	Required textbooks
	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)

You Tube, Electronic websites

Electronic references, Internet sites